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Rosendahl, Carl Otto and
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Guide to the spring flowers
of Minnesota.

[Ed.6, rev.]

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BY

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A Guide to the Spring Flowers of Minnesota

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and Chairman of the Department

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PREFACE TO THE SIXTH EDITION

In the present edition the *Guide to the Spring Flowers of Minnesota* has been considerably enlarged through the introduction of brief diagnostic descriptions of all the genera. It is believed that this added feature will make the *Guide* much more useful, since a careful reading of the generic description will in most cases readily show whether or not the proper genus has been found. It thus affords a means of checking oneself at a critical point in the "running down" of the species and thus of doing away with the annoying state of uncertainty that otherwise is apt to occur.

This edition of the *Guide* includes ten more genera and about sixty more species than the fifth edition. The aim has been to include all the native and the commonly cultivated garden species that blossom during a normal season before the fifteenth of June. A number of figures illustrating the chief floral structures used in the classification of flowering plants have been added. These will be found on pages 74 to 79. Those not thoroughly familiar with botanical terminology will find these illustrations, as well as the appended glossary, very helpful.

Carl O. Rosendahl
Frederic K. Butters

The University of Minnesota
October 1, 1931.

INTRODUCTION

Terminology

In botanical practice the name of a plant is made up of two words, for example, *Anemone canadensis, Phlox pilosa,* and so on. The first word represents the *genus* or group to which the plant belongs and is always written with a capital letter. The second word indicates the *species* or kind and is rarely capitalized. The meaning of the terms *genus* and *species* and the manner in which they are used can be made clear by the following illustration. In Minnesota there are three native kinds or *species* of pine, viz., the white pine, the Norway pine, and the Jack pine. They all belong to the group or genus *Pinus* and are known respectively as *Pinus Strobus, Pinus resinosa,* and *Pinus Banksiana.* Somewhat closely related to the pines are other cone-bearing evergreens such as spruces, firs, hemlocks, cedars, and junipers. These different genera (plural of genus), with some others, together form a larger relationship, which is known as the pine family, or *Pinaceae.* In a similar manner anemones, buttercups, marsh marigolds, hepaticas, and many other spring flowers are grouped into the crowfoot family or *Ranunculaceae.* The ending *aceae,* which is generally used to denote a family, is the feminine plural of the Latin suffix, *aceus,* meaning *like,* or *related to.* The family name *Pinaceae* is really an adjective agreeing with *plantae* (plants) and meaning *plants related to the pine.*

Leaf Outlines

1. Linear. 2. Lanceolate. 3. Oblong. 4. Elliptic. 5. Ovate.
6. Oblanceolate. 7. Spatulate. 8. Obovate. 9. Cuneate.

Families of plants having some floral characteristics in common are grouped into aggregations which are called *orders.* The orders generally have the ending *ales,* e.g., *Ranales, Liliales,* etc. This ending is likewise in the feminine plural and the meaning of the name is, for example, in the latter case *plant families related to the lily family.*

Orders are further assembled into still larger groups, such as *monocotyledons,* flowering plants with a single seed-leaf, and *dicotyledons,* those with two seed-leaves; *angiosperms,* flowering plants with closed pistils and usually with sepals and petals, and *gymnosperms,* with open pistils and no sepals or petals.

Keys and How to Use Them

The only sure method by which a plant species can be determined is by tracing it step by step through the family, genus, and species keys. In a publication of as limited compass as the present *Guide,* where species descriptions have had to be dispensed with, the need for careful use of the keys is very obvious. To insure the greatest facility, as well as accuracy, in the use of the keys they are based on the method of alternatives, e.g., I. petals present, II. petals absent. The two alternatives, rarely more, are indicated by being equally indented and by the same series of signs, e.g., 1 and 2, a and b, (x) and (y), and so forth. At every step the user must consider both alternatives before making a choice, in order to make sure of tracing a plant readily and certainly. In the construction of the keys the object has been to make them as simple and direct as accuracy will permit, yet the beginner is sure to encounter terms with which he is not familiar. Such terms should be looked up in the glossary as they appear and their meaning ascertained, otherwise it is inevitable that one will go astray. For the successful working of a key

Leaf Outlines and Bases

1. Cordate. 2. Orbicular. 3. Auriculate. 4. Reniform.
5. Peltate. 6. Sagittate.

two rules must be constantly and strictly observed, viz., (1) accurate observation of the structure in question, and (2) correct interpretation of descriptive terms. To aid the beginner in understanding the terminology used a series of figures illustrating floral and vegetative organs has been inserted in this introduction and in plates at the end of the book.

Pronunciation

The names of plants, families, and so forth, are best pronounced according to the so-called English pronunciation of Latin, i.e., there are no silent letters; there is a separate syllable for each vowel or diphthong; *c* and *g* are soft before *e, i, y, ae,* and *oe,* hard before *a, o,* and *u;* the simple vowels are given the ordinary English sounds, *ae* and *oe* are pronounced like long *e*. The accent is indicated in the text.

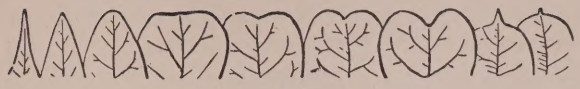
Leaf Margins

1. Entire. 2. Serrate. 3. Dentate. 4. Crenate. 5. Undulate.
6. Sinuate. 7. Incised.

Verification and Determination of Specimens

The beginner will find occasional plants that he is unable to name. Even the student of more experience will now and then find very puzzling forms. In such cases it is necessary to refer the question to a good herbarium, if one is accessible, or to the professional botanist. The Department of Botany will be glad to have fresh or dried plants sent to it for verification or determination at any time. Fresh specimens can be sent readily through the mails by wrapping them in moist paper and placing them in a small tin box. Empty baking powder cans or nabisco wafer boxes make suitable containers for this purpose.

LEAF TIPS



1. Acuminate. 2. Acute. 3. Obtuse. 4. Truncate. 5. Retuse.
6. Emarginate. 7. Obcordate. 8. Cuspidate. 9. Mucronate.

LOBED LEAVES

1. Lobed. 2. Cleft. 3. Parted. 4. Divided.
Upper series pinnate, lower series palmate.

Frequently it will be found more convenient to send dried specimens. In such cases the plants should first be pressed and dried between blotters or newspapers and then packed so that they will not be crushed or broken in the mails. In order to make classification certain, especially in difficult groups like grasses, sedges, pondweeds, composites, and so forth, it is necessary to have either flowering or fruiting stages of the plants submitted for determination.

THE CHART

The chart on page ix is designed to show in a graphic way the lines of descent of flowering plants and to indicate the relationship of the various orders.

It is based upon recent theories of phylogeny, which conceive of the primitive angiosperm flower as a strobilus bearing two kinds of sporophylls, i.e., stamens and pistils in considerable numbers upon an elongated and cone-shaped receptacle protected by a leafy covering or perianth and all members free from each other. Among living angiosperms certain members of the *Magnoliaceae* of the order *Ranales* stand nearest to this hypothetical ancestor.

The primitive flower on this theory was a complex structure subject to variation along lines of simplification and reduction, as well as along lines of amplification and increase in complexity. Many factors may have played a part in bringing about the great diversity of flower types that exist today, but the chief rôle must be ascribed to the stimulus of the need for pollination.

The principal agents of pollination are insects and wind and it is safe to assume that both of these have been operative since the advent of flowering plants. Most of the existing gymnosperms are pollinated through the agency of the wind but it is not improbable that some extinct lines of this group may have enlisted the aid of insects in carrying pollen from one flower to another. At any rate, so far as the early angiosperms are concerned, the evidence indicates that they were largely insect-pollinated.

Pollination by insects is a comparatively direct and certain process, since insects flit from flower to flower usually with great rapidity and the flowers are so constructed that the parts of the

insect's body, dusted with pollen in one flower, touch the stigmas of another flower of the same species; whereas the transfer of pollen from stamen to stigma by wind is a matter of chance entirely. The direct result of this is a minimum production of pollen in one case and a prodigal production and expenditure of it in the other.

Compound Leaves

1. Odd-pinnate. 2. Abruptly pinnate. 3. Palmate.

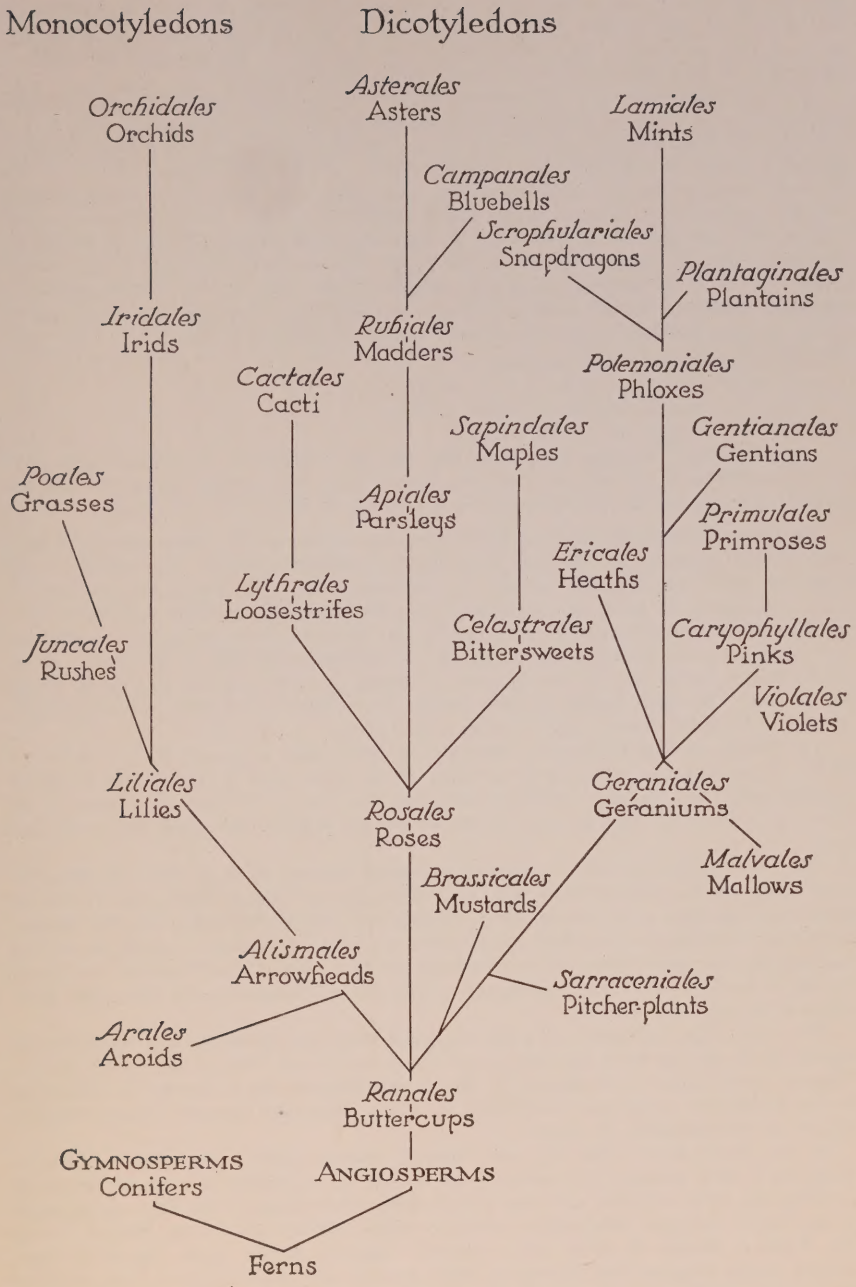
Flowers that have held to the mode of insect pollination have developed along the lines of making themselves attractive to the visiting insects. This has been effected in part by showy corollas or conspicuous coloration of bracts or leaves near the flowers, by attractive odors, by providing food in the form of nectar or excess pollen, or by offering shelter against the elements. In general, the result has been an elaboration of the structure of the flower. This is shown, for example, in the *Orchidaceae,* where highly complicated flowers have been built up, but is also characteristic of numerous other groups like the pea, milkweed, snapdragon, myrtle, thistle, and other families.

On the other hand, where the wind is the agent of pollination the tendency has been towards a reduction and simplification of floral structure, often to the extent of complete suppression of all structures not concerned with the production of pollen or ovules. This is shown, for example, with convincing clearness in maples and ashes.

The Norway maple, introduced in this region, has flowers possessing calyx, corolla, stamens, pistils, and a honey-secreting disk. The flowers are eagerly sought by insects and are pollinated by them. The soft and hard maples are destitute of petals and in the latter species the flowers are borne on long slender pedicels and are to some extent wind-pollinated. Lastly, in the case of the box elder not only are the petals lacking but the calyx also has become insignificant in size, the disk obsolete, the stamens have been suppressed in one set of flowers and the pistils in another, and the two kinds of flowers have been isolated on separate trees. The stamen-bearing flowers are suspended upon slender pedicels, sway freely in the lightest breeze, and pollination is effected by the wind only. Similar modifications have taken place among the ashes. *Fraxinus ornus,* of southern Europe, has perfect flowers with conspicuous corollas, while the great majority of species of the genus are characterized by naked, unisexual flowers and wind pollination.

Examples like these of progressive reduction could be cited for most of the large families of the flowering plants and it can be safely stated that reduction is one of the most frequent occurrences in floral evolution.

Along with the progressive changes induced by the needs for facilitating pollination have come other structural modifications of the flower, which, although they appear entirely logical, are difficult to account for or to explain. Chief among these are the progressive shortening of the receptacle or torus and a tendency for the members of each group to adhere or fuse with each other. A direct result of the shortening of the receptacle has been a reduction in the number of members, particularly of pistils and stamens, and their arrangement in whorls or cycles instead of a winding spiral. When the cyclic arrangement was attained the members of each cycle tended to fuse with each other and to arise as a single compound organ. This is particularly true of pistils and petals but


Monocotyledons
Dicotyledons
Orchidales
Orchids
Asterales
Asters
Lamiales
Mints
Campanales
Bluebells
Scrophulariales
Snapdragons
Plantaginales
Plantains
Iridales
Irids
Rubiales
Madders
Polemoniales
Phloxes
Cactales
Cacti
Sapindales
Maples
Gentianales
Gentians
Poales
Grasses
Apiales
Parsleys
Primulales
Primroses
Ericales
Heaths
Lythrales
Loosestrifes
Celastrales
Bittersweets
Caryophyllales
Pinks
Juncales
Rushes
Violales
Violets
Liliales
Lilies
Rosales
Roses
Geraniales
Geraniums
Malvales
Mallows
Brassicales
Mustards
Alismales
Arrowheads
Sarraceniales
Pitcher-plants
Arales
Aroids
Ranales
Buttercups
Gymnosperms
Conifers
Angiosperms
Ferns

also takes place occasionally among sepals and stamens. Furthermore, it frequently happens that the members of separate cycles adhere to each other or that inner cycles appear to arise upon outer ones as, for instance, petals and stamens upon the calyx or stamens upon the corolla, a phenomenon of very common occurrence among the sympetalous families.

As stated at the beginning of this discussion, the primitive angiospermous flower in all probability possessed a simple perianth, consisting of numerous similar parts such as still persists today among magnolias and water lilies and other representatives of the *Ranales* order. In this primitive perianth, through a division of labor, the outer members gradually assumed the function of protection and retained or developed leaf-like characters, in other words, became the calyx. The remaining members assumed the function of attracting insects and in various ways became conspicuous and attractive and thus developed into the corolla. Later on, additional modifications took place in the corolla, particularly through fusion of the petals, resulting in tubular types, or through changes in the shape of some of the petals giving rise to irregular forms. Most of these modifications have developed in response to the need for insuring and facilitating cross-pollination. To summarize briefly, the primitive angiospermous flower had therefore the following structure:

1. An elongated cone-shaped receptacle.
2. A simple perianth, consisting of many similar parts.
3. Numerous stamens arranged in a spiral manner.
4. Numerous carpels, also spirally arranged.
5. All the organs were free from each other and the members of the different series were inserted at different levels upon the receptacle. Such a flower was typically hypogynous with the perianth at the base of the receptacle followed respectively by the stamens and carpels.

The great complexity and variety of flower types that characterize the modern angiosperms have arisen through progressive modifications, which may be formulated as follows: (1) reduction in the number of parts from large and indefinite to small and definite; (2) progression from spiral to cyclic arrangement of parts; (3) progression from free to united members, particularly from apocarpy to syncarpy and apopetaly to sympetaly; (4) progression from hypogynous to epigynous insertion of parts; (5) progression from regularity to irregularity, especially of the corolla; (6) in wind-pollinated flowers, abortion or suppression of stamens or pistils resulting in unisexual flowers and of petals and sepals leading to naked flowers. In accordance with these various principles of floral evolution the chart on page ix has been constructed.

The *Ranales* order or *Polycarpicae* constitutes the basic group or plexus. From it or its immediate progenitors, now extinct, have developed all the other orders of dicotyledons as well as monocotyledons. For the sake of simplicity only three main lines of evolution are indicated in the chart, but it should be borne in mind that the advance has probably been along more paths than these.

The monocotyledonous series is conceived as having branched off at a very early time, but even among existing monocotyledons there are several types, particularly among the *Helobiae* or arrowheads, that show very primitive flower structure and indicate relationship with the *Ranales*. In this line of development the *Liliales* order constitutes a great central plexus in which the so-called monocotyledonous type of flower has been perfected and from which, through reduction and simplification on one hand and through amplification and increase in complexity on the other, most of the orders of the series have evolved.

The rushes, sedges, and grasses are highly specialized groups with greatly reduced wind-pollinated flowers, yet in some of these, especially among the *Juncaceae* and a few of the *Cyperaceae*, the liliaceous type of flower is still discernible. The monocotyledonous line is regarded as culminating in the *Orchidaceae*, which are characterized by highly complicated irregular flowers especially adapted to cross-pollination by insects.

In the dicotyledonous series two main lines of progress, based upon certain well-marked tendencies of floral evolution, are shown. In the middle line a tendency towards the perigynous condition was early manifested and came to be a characteristic feature of the large central plexus of the *Rosales*. The steps from perigyny to epigyny readily followed, and we find, therefore, among the *Rosales* a number of genera with completely epigynous flowers. From this plexus there evolved various epigynous lines, in some of which reduction and simplification of floral structures have occurred, resulting in a number of wind-pollinated monoecious and dioecious families. In others, fusion of petals and the development of showy and irregular corollas have taken place. This line

of development has culminated in the Compositae, which combine, together with reduction in the number of carpels and ovules, epigyny, sympetaly, and irregularity of the flower.

Along the remaining line of progression among the dicotyledons the hypogynous condition has been almost universally maintained throughout. As in the middle line simplification of the flower has given rise to several wind-pollinated groups such as ashes, poplars, nettles, and so forth, yet the emphasis has been placed largely upon the development of sympetalous and showy corollas, ending with highly specialized irregular forms such as occur typically among snapdragons and mints.

Double Flowers

Double flowers are essentially abnormalities in which the number of petals is greatly increased, usually at the expense of the reproductive organs. They occur fairly frequently in nature, though, on account of their more or less complete sterility, they show slight tendency to increase. Their showy flowers make them great favorites in gardens. If the carpels are still recognizable, the flower can usually be identified in the following keys by assuming that the petals are the same in number as the sepals. A key to the more commonly cultivated double spring flowers is given on page xviii.

KEY TO FAMILIES

		PAGE
I. Petals present		
1. Flowers single or in clusters, not in heads		
A. Petals 1 or 2		
a. Petal 1, flowers irregular	*Leguminosae*	37
b. Petals 2, flowers regular	*Liliaceae*	62
B. Petals 3 *		
a. Sepals green, unlike the petals		
(1) Leaves grass-like, flower withering the first day	*Commelinaceae*	57
(2) Leaves broad, flower persistent	*Liliaceae*	62
b. Sepals and petals more or less alike in color and texture		
(1) Flowers irregular, petals unlike		
(a) Stamens 1 or 2, fused with the style	*Orchidaceae*	70
(b) Stamens 6–8, borne on the corolla	*Polygalaceae*	13
(2) Flowers regular		
(a) Ovary inferior		
x. Stamens 6	*Amaryllidaceae*	67
y. Stamens 3	*Iridaceae*	68
(b) Ovary superior		
x. Stamens and pistils in different flowers	*Smilacaceae*	67
y. Stamens and pistils in the same flower		
(x) Sepals and petals green or greenish-brown, very small		
m. Flowers green, in racemes or spikes	*Juncaginaceae*	56
n. Flowers greenish-brown, in clusters or heads	*Juncaceae*	67
(y) Sepals and petals never greenish-brown, nor green and very minute	*Liliaceae*	62
C. Petals 4 or more		
a. Petals separate		
(1) Petals 4		
(a) Flowers regular		
x. Stamens 4–5, usually shrubs		
(x) Thorns present, leaves compound	*Rutaceae*	15
(y) Thorns absent, leaves simple		
m. Leaves evergreen, very small	*Ericaceae*	21
n. Leaves not evergreen	*Cornaceae*	50
y. Stamens 6	*Cruciferae*	10
z. Stamens more than 6		
(x) Stamens 9–12, leaves compound	*Capparidaceae*	9
(y) Stamens many, leaves simple		
m. Herbs, ovary superior	*Papaveraceae*	8
n. Shrubs, ovary inferior	*Saxifragaceae*	40
(b) Flowers irregular		
x. Flowers spurred, leaves deeply cut or compound		
(x) Stamens many, pistils 2–3	*Ranunculaceae*	4
(y) Stamens 6, pistil 1	*Fumariaceae*	9
y. Flowers not spurred		
(x) Trees with compound leaves, ovary superior	*Sapindaceae*	44
(y) Herbs with simple leaves, ovary inferior	*Onagraceae*	42

* For flowers with more than 6 stamens see under II, Petals absent, Page xvi.

		PAGE
(2) Petals 5 or more		
(a) Flowers regular		
(x) Pistil simple, 1–many		
(x) Pistils, few–many		
m. Twining vines, flowers dioecious	*Menispermaceae*	8
n. Herbs or shrubs, flowers perfect		
(m) Stamens and petals coming off with the calyx	*Rosaceae*	31
(n) Stamens and petals entirely free from the calyx	*Ranunculaceae*	4
o. Trees; flowers perfect, large, petals 6–9	*Magnoliaceae*	4
(y) Pistil 1		
m. Stamens 6–12	*Berberidaceae*	7
n. Stamens many		
(m) Woody plants	*Prunus in Rosaceae*	32
(n) Herbs	*Ranunculaceae*	4
y. Pistil compound		
(x) Shrubs or trees		
m. Vines with tendrils	*Vitaceae*	44
n. Woody plants without tendrils		
(m) Ovary superior		
r. Leaves simple		
(r) Stamens more numerous than the petals		
h. Style and stigma 1		
(h) Ovary 1-celled, stamens 9–30	*Cistaceae*	16
(i) Ovary 5-celled, stamens 5–10	*Ericaceae*	21
i. Styles 2, ovary 2-celled, 2-lobed	*Aceraceae*	45
(s) Stamens as many as petals		
h. Stamens opposite the petals	*Rhamnaceae*	43
i. Stamens alternate with the petals	*Aquifoliaceae*	44
s. Leaves compound		
(r) Leaves with transparent dots, aromatic	*Rutaceae*	15
(s) Leaves not dotted or aromatic		
h. Erect shrub, flowers white	*Staphyleaceae*	44
i. Low shrub or vine without tendrils	*Anacardiaceae*	45
(n) Ovary inferior		
r. Stamens 5, ovary 1-celled	*Saxifragaceae*	40
s. Stamens 5–many, ovary 2–10-celled	*Rosaceae*	31
(y) Herbs		
m. Leaves pitcher-shaped	*Sarraceniaceae*	13
n. Leaves not pitcher-shaped		
(m) Ovary many-celled, aquatic plants	*Nymphaeaceae*	8
(n) Ovary 5-celled (rarely 3-celled)		
r. Ovary superior		
(r) Leaves simple, evergreen	*Ericaceae*	21
(s) Leaves deeply cut or compound		
h. Leaves deeply cut	*Geraniaceae*	14
i. Leaves trifoliolate	*Oxalidaceae*	14
j. Leaves pinnate	*Rutaceae*	15
s. Ovary inferior	*Araliaceae*	49
(o) Ovary 1–2-celled		

		PAGE
r. Ovary 2-celled		
(r) Ovary superior to half-inferior, many-seeded	*Saxifragaceae*	40
(s) Ovary wholly inferior, 2-seeded	*Umbelliferae*	49
s. Ovary 1-celled		
(r) Sepals 5		
h. Styles 2, placentae parietal	*Saxifragaceae*	40
i. Styles 3–5, (rarely 2) placenta central	*Caryophyllaceae*	17
(s) Sepals 2		
h. Stamens many	*Papaveraceae*	8
i. Stamens 5	*Portulacaceae*	18
(b) Flowers irregular		
x. Ovary 3-celled, stamens long-exserted	*Sapindaceae*	44
y. Ovary 1–2-celled, stamens mostly included		
(x) Flowers spurred, ovary 1-celled with 3 parietal placentae	*Violaceae*	16
(y) Flowers not spurred, ovary 1–2-celled with 1 placenta	*Leguminosae*	37
b. Petals united		
(a) Ovary superior		
x. Shrubs		
(x) Low, mostly evergreen shrubs, stamens 4–10	*Ericaceae*	21
(y) Erect deciduous shrubs, stamens 2	*Oleaceae*	24
y. Herbs		
(x) Ovary 4-lobed, each lobe containing one ovule, fruit a group of nutlets		
m. Flowers regular, leaves alternate	*Boraginaceae*	27
n. Flowers irregular, leaves opposite.	*Labiatae*	31
(y) Ovary not 4-lobed, ovules usually numerous, fruit a capsule or berry		
m. Ovary 1-celled		
(m) Stamens alternating with the petals, placentae parietal		
r. Plants smooth, leaves 3-foliolate	*Gentianaceae*	24
s. Plants hairy, leaves pinnately lobed or divided	*Hydrophyllaceae*	26
(n) Stamens opposite the petals, placenta basal-central	*Primulaceae*	23
n. Ovary 2-celled		
(m) Leafless, colorless herbs	*Orobanchaceae*	30
(n) Leafy herbs		
r. Flowers regular		
(r) Petals 4, scarious, plants stemless with scapes	*Plantaginaceae*	30
(s) Petals 5, stamens 5, plants with leafy stems	*Solanaceae*	26
s. Flowers irregular, stamens 2–4	*Scrophulariaceae*	28
o. Ovary 3-celled	*Polemoniaceae*	25
(b) Ovary inferior		
x. Woody plants		
(x) Stamens 5	*Caprifoliaceae*	51
(y) Stamens 8–10	*Ericaceae*	21
y. Herbs		
(x) Stamens 3	*Valerianaceae*	53
(y) Stamens 4–5		
m. Stamens united, sap milky	*Campanulaceae*	53

		PAGE
n. Stamens separate		
(m) Leaves united by their bases	*Caprifoliaceae*	51
(n) Leaves not united	*Rubiaceae*	51
(z) Stamens 8–12	*Adoxaceae*	53
2. Flowers in heads		
a. Ovary superior		
(1) Petals 3, similar, greenish-brown	*Juncaceae*	67
(2) Petals 5, unlike	*Trifolium in Leguminosae*	39
b. Ovary inferior		
(1) Petals separate, style simple	*Cornaceae*	50
(2) Petals united, style 2-cleft	*Compositae*	53
II. Petals absent		
1. Sepals present, rarely very minute, the flowers not in catkins, spikelets, or dense spikes		
a. Woody plants		
(1) High climbing vines		
(a) Twining vines with solitary pipe-shaped flowers	*Aristolochiaceae*	43
(b) Vines climbing with tendrils, flowers small, clustered (petals present, but falling as the flowers open)	*Vitaceae*	44
(2) Trees or erect shrubs		
(a) Pistil 1, at least as to the ovary		
x. Style 1, sometimes 2- or 3-cleft at the top		
(x) Tall trees with pinnately compound leaves	*Oleaceae*	24
(y) Shrubs or low trees with simple leaves		
m. Ovary 1-celled, stigma 1		
(m) Leaves green and glabrous	*Thymeliaceae*	42
(n) Leaves silvery or scurfy	*Elaeagnaceae*	42
n. Ovary 3-celled, stigmas 3	*Rhamnaceae*	43
y. Styles or sessile stigmas 2		
(x) Leaves deeply cut or compound, opposite, ovary 2-celled	*Aceraceae*	45
(y) Leaves simple, alternate, not deeply cut	*Ulmaceae*	13
(b) Pistils 2–5, prickly shrub with aromatic foliage	*Rutaceae*	15
b. Herbs		
(1) Nearly colorless herbs, parasitic on trees	*Loranthaceae*	43
(2) Plants with green leaves		
(a) Pistils several–many	*Ranunculaceae*	4
(b) Pistil 1, at least the ovary		
x. Sepals united into a corolla-like tube	*Nyctaginaceae*	19
y. Sepals not united into a corolla-like tube		
(x) Stamens as many as the sepals		
m. Flowers in dense fleshy spikes	*Araceae*	56
n. Flowers not in fleshy spikes		
(m) Ovary superior, styles and stigmas 3	*Polygonaceae*	19
(n) Ovary inferior		
h. Style and stigma 1	*Santalaceae*	43
i. Styles and stigmas 2	*Umbelliferae*	49
(y) Stamens more numerous than the sepals		
m. Ovary inferior, sepals 3	*Aristolochiaceae*	43
n. Ovary superior, sepals 4–6		
(m) Sepals 4, stamens 6–8		
r. Stamens 6, style and stigma 1	*Cruciferae*	10
s. Stamens usually 8, styles and stigmas 2	*Saxifragaceae*	40

		PAGE
(n) Sepals 5–6		
r. Stamens numerous, styles 3, stigmas 6	*Euphorbiaceae*	15
s. Stamens 6–9	*Polygonaceae*	19
2. Perianth entirely absent or else very small, in the latter case at least the staminate flowers in catkins, spikelets, or dense spikes		
a. Woody plants		
(1) Leaves scale-like or needle-like, usually evergreen		
(a) Leaves resinous, fragrant or strong-smelling when bruised; fruit a cone or a several-seeded blue berry		
x. Leaves alternate or fascicled, fruit a cone with spirally arranged scales	*Pinaceae*	1
y. Leaves opposite or whorled, fruit a cone with opposite scales, or a blue berry	*Cupressaceae*	2
(b) Leaves not resinous, fruit a naked seed partially surrounded by a bag-like, fleshy red aril	*Taxaceae*	3
(2) Leaves fan-shaped, deciduous	*Ginkgoaceae*	3
(3) Leaves not needle-like, scale-like, or fan-shaped, deciduous.		
(a) Leaves simple, at least the staminate flowers in catkins.		
x. Staminate flowers with an obvious calyx of 4–8 sepals, visible without dissecting the catkin		
(x) Pistillate flowers in catkins, sap milky	*Moraceae*	13
(y) Pistillate flowers not in catkins, sap not milky	*Fagaceae*	48
y. Staminate flowers without an obvious calyx (perianth represented by a disk, or by minute glands, or hidden between the scales of the catkins, or entirely wanting)		
(x) Pistillate flowers in catkins, with 1 flower at each node of the catkin		
m. Dioecious trees and shrubs (mostly tall), ovary with numerous ovules; fruit a capsule with many hairy seeds	*Salicaceae*	20
n. Low shrubs with very fragrant leaves, ovary with 1 ovule, fruit a nutlet	*Myricaceae*	48
(y) Flowers monoecious, pistillate flowers in clusters, or in complex catkins with 2–3 flowers at each node	*Betulaceae*	46
(b) Leaves compound		
x. Leaves alternate, staminate flowers in catkins	*Juglandaceae*	46
y. Leaves opposite, flowers in dense clusters	*Oleaceae*	24
b. Herbs		
(1) Flowers in heads surrounded by 4–5 petal-like glands	*Euphorbiaceae*	15
(2) Flowers in spikes or spikelets		
(a) Spike fleshy, with a leafy spathe	*Araceae*	56
(b) Flowers in papery spikelets, with scales		
x. Flower enclosed in two scales; stem hollow, round	*Gramineae*	57
y. Flower with a single scale; stem solid, mostly triangular	*Cyperaceae*	61

KEY TO GENERA OF DOUBLE FLOWERS

		PAGE
I. Trees or shrubs		
1. Leaves opposite		
a. Flowers in many-flowered panicles, small; ovary superior or wanting	*Syringa*	25
b. Flowers in few-flowered racemes, large; ovary inferior	*Philadelphus*	42
2. Leaves alternate		
a. Shrubs with prickly stems, and pinnately compound leaves	*Rosa*	35
b. Large shrubs or small trees, sometimes thorny but not prickly, leaves simple		
(1) Flower perigynous, ovary 1, free in the bottom of a cup-shaped hypanthium	*Prunus*	32
(2) Flower epigynous, inferior ovary 5-celled	*Malus*	35
II. Herbs		
1. Petals spurred	*Aquilegia*	5
2. Petals not spurred		
a. Flower with a definite and recognizable calyx (the sepals sometimes early deciduous)		
(1) Sepals 5		
(a) Sepals not united, flower bright yellow	*Ranunculus*	5
(b) Sepals united into a tubular calyx, flower white, pink or red	*Dianthus*	17
(2) Sepals 2		
(a) Sepals falling as the flower opens; leaves thin, lobed	*Papaver*	8
(b) Sepals persistent; leaves cylindrical	*Portulaca*	19
b. Flower without an easily recognizable calyx, the outer perianth parts all similar		
(1) Ovary obvious, inferior	*Narcissus*	68
(2) Ovary wanting, or concealed among the inner petals		
(a) Flower large, solitary	*Tulipa*	66
(b) Flowers small, in a raceme	*Hyacinthus*	66

Spermatophytes Flowering Plants

Gymnospermae Gymnosperms

CLASS CONIFERAE

Coniferales Pine Order

Pináceae — Pine Family

Resinous trees or shrubs, usually evergreen; flowers monoecious, cone-like; the staminate consisting of an axis bearing numerous spirally arranged, scale-like stamens; the pistillate consisting of an axis bearing spirally arranged scales in a double series, each fertile scale standing in the axil of a bract and bearing 2 inverted naked ovules on its upper side; fruit a cone with hard, dry, spirally arranged, fertile scales, the bracts very obvious or entirely concealed by the fertile scales.

I. Foliage leaves all scattered, alternate
  1. Leaves flat, linear, more or less twisted into two ranks
    a. Buds small, round, resinous; cones upright with deciduous scales — *Abies*
    b. Buds scaly, not resinous; cones pendent with persistent scales
      (1) Leaves about 2 cm. long, their scars scarcely raised; bracts of cone long — *Pseudotsuga*
      (2) Leaves about 1 cm. long, their scars raised on woody projections; bracts of cone short — *Tsuga*
  2. Leaves four-sided in section, not at all two-ranked, their scars raised on woody projections — *Picea*

II. Foliage leaves or some of them in fascicles
  1. Leaves deciduous, some scattered, others in large fascicles — *Larix*
  2. Leaves evergreen, in fascicles of 2–5 — *Pinus*

ÁBIES — BALSAM FIR

(L. and Gr. *abies,* fir tree)

Evergreen trees with mostly smooth, resinous bark; twigs with flat, round leaf-scars; leaves flat, spirally arranged but usually twisted more or less into one plane; cones upright, the cone-scales falling at maturity from the persistent axes. Pl. 1, fig. A.

1. Native tree; leaves dark green above, fragrant, 1–2 cm. long — *A. balsámea*
2. Cultivated West-American tree; leaves pale above, 2–3.5 cm. long — **A. cóncolor*

PSEUDOTSÚGA — DOUGLAS FIR

(Gr. *pseudes,* false, Japanese *tsuga,* hemlock)

Evergreen trees with mostly smooth, resinous bark when young, becoming very deeply ridged in old trees; twigs with oval, flat or slightly raised leaf-scars; leaves flat, spirally arranged, but somewhat twisted into one plane; cones drooping, finally falling off the tree entire, the fertile scales interspersed with conspicuous 3-pointed bracts. Pl. 1, fig. B. Our only species, **P. taxifólia.*

TSÚGA — HEMLOCK

(Japanese *tsuga,* hemlock)

Evergreen trees with rough bark; twigs very slender and roughened with raised leaf-scars; leaves very small, flat, minutely petioled, spirally arranged but twisted into a very flat spray; cones with only one series of scales visible externally, very small, falling off unbroken. Pl. 1, fig. D. The only species in our flora, *T. canadénsis.*

* The species marked by an asterisk are cultivated plants that do not occur wild within the state.

PICEA — SPRUCE

(L. *picea,* spruce or fir tree, from *pix,* pitch)

Evergreen trees with scaly bark; twigs strongly roughened with the raised leaf-scars; leaves 4-sided in our species, needle-like, spirally arranged and projecting in all directions from the twigs; cones with only one series of scales visible externally, persistent on the tree or falling off unbroken. Pl. 1, fig. D.

1. Twigs spreading horizontally; cones less than 8 cm. long
   a. Twigs smooth; cone-scales flexible
      (1) Leaves very stiff and blue, 25–30 mm. long; cultivated — **P. púngens*
      (2) Leaves slender, 10–25 mm. long; native — *P. canadénsis*
   b. Twigs minutely hairy; leaves 5–15 mm. long; cone-scales stiff; native — *P. mariána*
2. Twigs drooping; cones 10–20 cm. long; cultivated — **P. Ábies*

PLATE 1: A, Abies balsamea; B, Pseudotsuga taxifolia; C, Tsuga canadensis; D, Picea mariana; E, Larix laricina; F, Pinus Banksiana; G, Thuja occidentalis; H, Sabina virginiana; I, Juniperus communis; J, Taxus canadensis; K, Ginkgo biloba.

LÁRIX — LARCH, TAMARACK

(L. *larix,* larch tree)

Deciduous trees with scaly bark; leaves spirally arranged on young shoots and in large fascicles on the older twigs and branches; leaves soft, needle-like; cones small or medium-sized with only one series of scales visible externally (in our species), finally falling off unbroken. Pl. 1, fig. E.

1. Native tree; mature cones 1–1.5 cm. long — *L. laricína*
2. Cultivated tree; mature cones 2.5–3.5 cm. long — **L. decídua*

PÍNUS — PINE

(L. *pinus,* the pine tree)

Evergreen trees or rarely shrubs; the foliage leaves all in fascicles of 2–5, which eventually fall off the tree as a unit; leaves flattened or 3-sided; cones with only one series of scales visible externally, persisting on the tree or eventually falling off unbroken. Pl. 1, fig. F.

1. Leaves in fascicles of 5; cones 15–20 cm. long — *P. Stróbus*
2. Leaves in fascicles of 2; cones 2–5 cm. long
   a. Leaves more than 1 dm. long
      (1) Leaves thin, flexible; bark reddish; native — *P. resinósa*
      (2) Leaves thick, stiff; bark gray; cultivated — **P. nígra*
   b. Leaves less than 1 dm. long
      (1) Trees usually 4–20 m. high
         (a) Leaves flexible, blue-green, 2.5–7 cm. long; cones reflexed; cultivated — **P. sylvéstris*
         (b) Leaves stiff, yellow-green, 2.5–5.5 cm. long; cones pointing forward; native — *P. Banksíana*
      (2) Low branching shrub, 1–4 m. high; leaves 4–7 cm. long; cultivated — **P. montána*

Cupressáceae — Cypress Family

Resinous trees or shrubs with opposite or whorled, scale-like or needle-like, evergreen leaves; flowers monoecious or dioecious, the staminate consisting of an axis bearing several opposite or

whorled, mostly peltate, stamens, the pistillate consisting of a single series of opposite or whorled scales, each bearing 2–many erect ovules; fruit a woody cone or sometimes fleshy and berry-like.

1. Cones woody; twigs and spray flat; leaves scale-like of two alternating types *Thuja*
2. Cones fleshy; twigs and spray not flattened; leaves scale- or needle-like, all alike on any one twig.
   a. Leaves usually opposite, scale-like on mature twigs *Sabina*
   b. Leaves in whorls of three, all needle-like, jointed at the base *Juniperus*

THÚJA — WHITE CEDAR, ARBOR-VITAE

(Gr. *thyia,* the arbor-vitae)

Evergreen trees or large shrubs with smooth or eventually shredded bark and a flat spray covered with minute opposite scale-like leaves of two forms (those on the top and bottom of the spray flat, those on the edges folded); cones very small, woody, consisting of a few pairs of opposite thin scales. Pl. 1, fig. G. Our only species, *T. occidentális.*

SABÍNA — SAVIN, RED CEDAR

(L. *herba sabina,* the Sabine plant)

Evergreen shrubs or trees with smooth or shredded bark, spray not flattened; the twigs covered with opposite or whorled scale-like or (particularly in young trees) needle-like leaves not jointed at the base; flowers dioecious; fruit berry-like, blue, consisting of several ranks of concrescent fleshy scales. Pl. 1, fig. H.

1. Small upright tree *S. virginiána*
2. Low creeping shrub *S. horizontális*

JUNÍPERUS — JUNIPER

(L. *juniperus,* the juniper)

Evergreen shrubs (rarely small trees); leaves in whorls of 3, needle-like or boat-shaped, spreading, jointed at the base; flowers dioecious; fruit berry-like, blue, consisting of a single whorl of concrescent fleshy scales with 2–3 whorls of minute dry scales at the base. Pl. 1, fig. I. Our only species, *J. communis.*

Taxáceae — Yew Family

Evergreen shrubs or trees; flowers dioecious or monoecious; staminate flowers cone-like, consisting of an axis bearing stamens; pistillate flowers not cone-like, much reduced; the ovules commonly solitary and exposed; seeds exposed, with a fleshy outer integument.

TÁXUS — YEW

(L. *taxus,* the yew tree)

Evergreen, non-resinous shrubs or small trees; leaves flat, petioled, spirally arranged but twisted into one plane; fruit a naked seed surrounded by a bright red, fleshy, bag-like aril open at the top. Pl. 1, fig. J. Our only species, the low shrub, *T. canadénsis.*

CLASS AND ORDER GINKGOALES

Ginkgo Order

Ginkgoáceae — Ginkgo Family

Deciduous tree; flowers dioecious; staminate flowers cone-like, consisting of an axis bearing numerous stamens; stamens stalked, furnished with two pendent pollen-sacs; pistillate flowers consisting of a naked stalk bearing at its summit a pair of ovules, each surrounded at its base with a collar-like growth; seeds drupe-like, the integuments consisting of an outer fleshy coat, a firm stony coat, and a thin papery layer. Consisting of only the following genus and species.

GÍNKGO — MAIDENHAIR TREE

(The Chinese Name)

Pl. 1, fig. K

Tree with fan-shaped leaves **G. bíloba*

Angiospermae Angiosperms

CLASS DICOTYLEDONS

Ranales Buttercup Order

Magnoliáceae — Magnolia Family

Trees or shrubs, with alternate leaves; sepals 3; petals 6–9, in whorls of 3; stamens many; pistils many, free or cohering; flowers apopetalous, hypogynous, and regular.

MAGNÓLIA — CUCUMBER TREE
(Named for the French botanist Magnol)

Trees or shrubs with large solitary flowers; sepals 3; petals 6–9; stamens numerous with short filaments and long anthers; carpels numerous; fruit a cone-like mass of carpels, which dehisce at the back, emitting the 1 or 2 fleshy seeds at the ends of fine threads. The only species in Minnesota, rarely cultivated, **M. acuminàta.*

Ranunculáceae — Buttercup Family

Herbs or climbing shrubs; sepals 3–15; petals 0–15; stamens 5–many; pistil 1–many; flower apocarpous, apopetalous or apetalous, hypogynous, usually regular.

I. Flowers regular
  1. Petals present
    a. Petals spurred — *Aquilegia*
    b. Petals not spurred
      (1) Pistils several to many
        (a) Pistils several, stalked in fruit — *Coptis*
        (b) Pistils many, not stalked
          x. Submerged aquatics
            (x) Flowers white — *Batrachium*
            (y) Flowers bright yellow — *Ranunculus*
          y. Terrestrial plants; flowers yellow or greenish
            (x) Flowers on a leafless stem, greenish — *Myosurus*
            (y) Flowers on a leafy stem, yellow — *Ranunculus*
      (2) Pistil 1 — *Actaea*
  2. Petals wanting, staminodes occasional
    a. Sepals white or colored, petaloid
      (1) Plant climbing or creeping; staminodes present — *Clematis*
      (2) Plant not climbing or creeping
        (a) Stem with a whorl of leaves, an involucre, below the flower
          x. Styles long, plume-like; involucre of many linear silky-hairy segments — *Anemone*
          y. Styles short or none, not plume-like
            (x) Involucre of 3 entire leaves close to the flower — *Hepatica*
            (y) Involucre some distance below the flower
              m. Involucre leaflets many, simple, petioled — *Anemonella*
              n. Involucre leaflets 2–3, compound or cut — *Anemone*
        (b) Stem leafy, without an involucre
          x. Leaves simple; flowers yellow or greenish white
            (x) Leaves unlobed, dentate; flowers bright yellow — *Caltha*
            (y) Leaves deeply lobed, serrate; flowers greenish white — *Hydrastis*
          y. Leaves compound; flowers white — *Isopyrum*
    b. Sepals greenish, flowers dioecious — *Thalictrum*
II. Flowers irregular — *Delphinium*

AQUILÉGIA — COLUMBINE

(L. *aquila,* eagle, derivation doubtful)

Perennial herbs with alternate, compound leaves; leaflets lobed; sepals 5, petal-like; petals 5, prolonged backward into hollow spurs; stamens numerous; pistils 5; fruit 5 separate follicles, many-seeded. Pl. 2, fig. C.

1. Native perennial; flowers scarlet and yellow — *A. canadénsis*
2. Cultivated short-lived perennials
   a. Spurs short and hooked; flowers purple or white — **A. vulgáris*
   b. Spurs long and slender, not hooked
      (a) Flowers blue; sepals wide-spreading, 3–4 cm. long — **A. coerúlea*
      (b) Flowers yellow; sepals ascending, less than 3 cm. long — **A. chrysántha*

CÓPTIS — GOLDTHREAD

(Gr. *koptos,* cut, from the leaves)

Low perennial herbs; from slender golden-yellow rhizomes; leaves compound, ternately divided; flowers small, white; sepals 5–7, petal-like, deciduous; petals 5–7, small, club-shaped, hollow at the apex; stamens 15–25; pistils 3–7, in fruit divergent, raised on slender stalks; fruit a group of long-stalked follicles. Our only species, *C. groenlándica.*

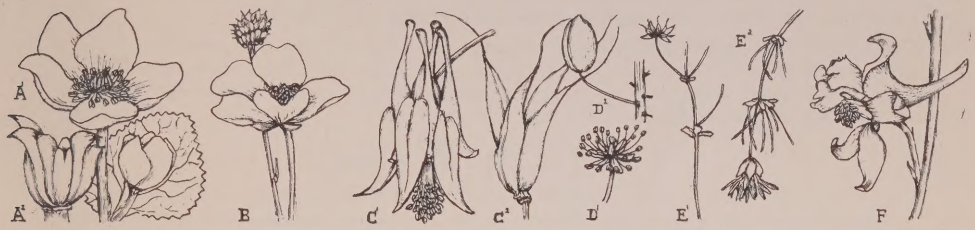


PLATE 2: A, Caltha palustris, 1, flower, 2, fruit; B, Ranunculus septentrionalis; C, Aquilegia canadensis, 1, flower, 2, fruit; D, Actaea rubra, 1, flower, 2, fruit; E, Thalictrum dioicum, 1, pistillate flower, 2, staminate flowers; F, Delphinium Penardi.

BATRÁCHIUM — FROGWORT

(Gr. *batrachion,* frogwort)

Aquatic or sub-aquatic perennial herbs with immersed leaves dissected into slender divisions; sepals and petals usually 5; petals white or yellowish towards the base with a small pit on the claw; stamens and pistils many; achenes transversely wrinkled. Our only species, *B. trichophýllum.*

MYROSÚRUS — MOUSETAIL

(Gr. *mys, myos,* mouse, *ura,* tail)

Small annuals with linear-spatulate, basal leaves and naked, 1-flowered scapes; flowers small, greenish; sepals 5, spurred at the base; petals 5 with a nectariferous pit at the summit of the slender claw; stamens 5–20; pistils numerous on a slender, spike-like receptacle, which becomes greatly elongated in fruit; achenes pointed. Our only species, *M. mínimus.*

RANÚNCULUS — BUTTERCUP, CROWFOOT

(L. *ranunculus,* a little frog)

Annual or perennial herbs with alternate leaves; flowers bright to pale yellow; sepals mostly 5, deciduous; petals mostly 5 with a nectariferous pit and small scale near the base; stamens many; pistils many; achenes generally flattened, tipped with a minute to elongated style. Pl. 2, fig. B.

1. Aquatic or mud plants with finely cut leaves
   a. Flowers 7–14 mm. wide; lobes of submerged leaves not thread-like — *R. Púrshii*
   b. Flower 15–30 mm. wide; lobes of submerged leaves thread-like — *R. delphinifólius*

2. Terrestrial plants
   a. Leaves all lobed or divided
      (1) Flowers less than 10 mm. wide; style hooked — *R. recurvátus*
      (2) Flowers 15–25 mm. wide; style not hooked
         (a) Plant low, tufted, and silky; leaflets narrow — *R. fasciculáris*
         (b) Plant over 2 dm. tall; leaf segments broad
            x. Plant very hairy — *R. híspidus*
            y. Plant slightly hairy — *R. septentrionális*
   b. Basal leaves mostly not lobed or divided
      (1) Plants creeping, rooting at the nodes; basal leaves linear to spatulate — *R. flámmula* var. *réptans*
      (2) Plants erect; basal leaves reniform or ovate
         (a) Basal leaves reniform; flowers less than 10 cm. wide — *R. abortívus*
         (b) Basal leaves ovate; flowers 10–30 cm. wide — *R. rhomboídeus*

ACTAÉA — BANEBERRY

(Gr. *aktea,* elder)

Perennial herbs with large, ternately compound leaves; leaflets sharply cleft and toothed; flowers white, in terminal racemes; sepals 4–5, early deciduous; petals 4–10, small, spatulate; stamens numerous, with slender white filaments; pistil 1; fruit a berry. Pl. 2, fig. D.

1. Pedicels slender; berries ovoid-ellipsoid
   a. Berries red — *A. rúbra*
   b. Berries white — *A. rúbra* forma *neglécta*
2. Pedicels thick; berries globular-ovoid, white — *A. álba*

CLÉMATIS — VIRGIN'S BOWER

(Gr. *klematis,* a climbing plant)

Perennial herbs or woody vines, climbing by the bending or clasping of the petioles; leaves opposite, compound; flowers mostly large; sepals 4–5, petaloid; petals none; stamens many, sometimes the outer modified into small petal-like staminodes; pistils many, the styles persistent, elongated and plumose in fruit.

Vine with opposite trifoliolate leaves and purple flowers — *C. verticilláris*

HEPÁTICA — LIVER-LEAF

(Gr. *hepatikos,* liver-like)

Perennial scapose herbs with long-petioled, 3-lobed leaves; flowers solitary on slender scapes; involucre consisting of 3 sepal-like leaves close under the flower simulating a calyx; sepals 6–12, petal-like, white to purple; stamens many; pistils several; achenes short-beaked.

1. Lobes of the leaves rounded or obtuse at apex — *H. americána*
2. Lobes of the leaves acute at apex — *H. acutíloba*

ANEMONÉLLA — RUE ANEMONE

(Diminutive of Anemone)

[Syndesmon]

Perennial herbs from a cluster of tuberous-thickened roots; leaves basal, compound; leaflets roundish, slightly lobed; involucre consisting of several similar petioled leaflets; flowers umbellate, large; sepals petaloid, pink to white; petals none; stamens many; pistils 4–15; achenes terete, grooved. Only one species, *A. thalictroídes.*

ANEMÓNE — ANEMONE, WINDFLOWER, PASQUE FLOWER

(Gr. *anemone,* windflower)

Erect perennial herbs with lobed, divided, or dissected basal leaves and 2–3 opposite or whorled stem-leaves forming an involucre near to or remote from the flower; peduncles 1-flowered, sepals 5–20, white to pink or purple; petals none; stamens many; pistils many; achenes flattened, pointed, or with a long plumose persistent style.

1. Stem simple, one-flowered
   a. Sepals 6–20; leaves with narrow segments
      (1) Styles long, plume-like; sepals usually 6; involucre of many linear silky-hairy segments [Pulsatilla] *A. pátens*
      (2) Styles short, not plume-like; sepals 10–20 *A. caroliniána*
   b. Sepals usually 5; leaves with broad segments *A. quinquefólia*
2. Stem branched, several-flowered, several involucred
   a. Flower white, 2.5–4 cm. wide; head of fruit oval
      (1) Stem leaves sessile *A. canadénsis*
      (2) Stem leaves petioled *A. virginiána*
   b. Flower greenish, 1–2 cm. wide; head of fruit cylindric *A. cylíndrica*

CÁLTHA — MARSH MARIGOLD

(L. *caltha,* marigold)

Glabrous, perennial, somewhat succulent herbs with rounded, cordate, or reniform large leaves; flowers large; sepals 5–9, petal-like, deciduous; petals none; stamens many; pistils few to many; follicles flattened, curved-spreading, many-seeded. Pl. 2, fig. A.

Leaves heart-shaped; flowers many, bright yellow *C. palústris*

HYDRÁSTIS — GOLDEN SEAL, ORANGE-ROOT

(Of doubtful origin and meaning)

Erect perennial herb with a knotty, yellow rhizome, palmately lobed leaves and small, solitary, greenish-white flowers; sepals petal-like, falling early; petals none; stamens many; pistils many, in fruit forming a small head of crimson-red berries resembling a raspberry. Our only species, *H. canadénsis.*

ISOPÝRUM — ISOPYRUM

(Gr. *isopyron,* name of a plant)

Slender, glabrous, perennial herbs with ternately compound leaves; leaflets 2–3-lobed; flowers white, axillary and terminal; sepals 5–9, petaloid; petals 0; stamens numerous, staminodes sometimes present; pistils 3–6 or more; follicles 2–several seeded. Our only species, *I. biternátum.*

THALÍCTRUM — MEADOW RUE

(Gr. *thaliktron,* meadow rue)

Erect perennial herbs with alternate, 2–3-ternately compound leaves; flowers dioecious, greenish or greenish-white; sepals 4–5; petals none; stamens many; pistils 4–15; achenes grooved or ribbed. Pl. 2, fig. E.

Leaves twice compound; flowers greenish, drooping *T. dióicum*

DELPHÍNIUM — LARKSPUR

(Gr. *delphinion,* larkspur)

Erect annual or perennial herbs with palmately lobed or divided leaves; flowers in racemes or panicles, showy, irregular; sepals 5, the posterior one prolonged into a spur; petals 4, in two dissimilar pairs, those of the upper pair projecting into the spur; stamens many; pistils 3 (sometimes 1–5); follicles many-seeded. Pl. 2, fig. F.

Flowers whitish, with 5 sepals and 4 petals *D. Penárdi*

Berberidáceae — Barberry Family

Herbs or shrubs with alternate simple or compound leaves; flower parts usually in whorls of 3; sepals 6–9; stamens 6–18; pistil 1, simple; flower apopetalous, hypogynous, regular.

1. Spiny shrub *Bérberis*
2. Herbs
   a. Leaves simple, deeply cut; flower white, single *Podophýllum*
   b. Leaves compound; flowers greenish, clustered *Caulophýllum*

BÉRBERIS — BARBERRY

(Arabic name)

Shrubs with yellow wood and inner bark, usually spiny; leaves mostly in fascicles; flowers yellow,

in racemes or singly from each leaf fascicle; sepals 6, with 2–6 outer bractlets; petals 6, concave; stamens 6; pistil 1; fruit a 1-seeded berry.

1. Leaves serrate; flowers and fruits in racemes — *B. vulgáris*
2. Leaves entire; flowers mostly one to each leaf cluster — **B. Thunbérgii*

PODOPHÝLLUM — MAY APPLE

(Gr. *podos,* foot, *phyllon,* leaf)

Erect perennial herbs with creeping rhizomes, large palmately lobed leaves and solitary, white flowers; flower bud with 3 fugaceous bracts; sepals 6; petals 6–9; stamens 12–18; pistil 1; fruit a large, fleshy, many-seeded berry. Our only species, *P. peltátum.*

CAULOPHÝLLUM — BLUE COHOSH

(Gr. *kaulos,* stalk, *phyllon,* leaf)

Erect perennial herbs from knotty rhizomes; leaves ternately compound; flowers yellowish-green; sepals 6, with 3–4 outer bractlets; petals 6, thick, gland-like, much smaller than the sepals; stamens 6; pistil 1; ovules 2, early bursting the ovary and ripening into two globose, stalked, blue seeds resembling berries. Our only species, *C. thalictroídes.*

Menispermáceae — Moonseed Family

Twining vines with alternate leaves; sepals 4–8; petals 6–8; stamens 12–24; pistils 2–4; flower apocarpous, apopetalous, hypogynous, regular.

MENISPÉRMUM — MOONSEED

(Gr. *mene,* moon, *sperma,* seed)

Climbing vines with alternate, broadly ovate leaves and small greenish-white dioecious flowers in panicles; sepals 4–8; petals 6–8, shorter than the sepals; stamens 12–24; pistils 2–4; fruit a drupe with a crescent-shaped stone. Our only species, *M. canadénse.*

Nymphaeáceae — Water Lily Family

Aquatic herbs; sepals 3–5; petals 5–many; stamens 5–many; pistils 1 compound or 3–many simple; flower apopetalous, hypogynous to epigynous, regular.

NYMPHOZÁNTHUS — YELLOW POND LILY

(Gr. *nymphaea,* water lily, *xanthos,* yellow)

[Nymphaea, Nuphar]

Aquatic herbs with thick, horizontal rhizomes; leaves large, cordate with a deep sinus; flowers large, yellow; sepals 5–6, thick, concave; petals numerous, small, thick, stamen-like; stamens many; pistil compound, many-celled; seeds numerous.

Herb with floating and submerged leaves and yellow many-parted flower — *N. variegáta*

Papaverales Poppy Order

Papaveráceae — Poppy Family

Herbs with colored sap; sepals 2; petals 4–12; stamens many; ovary 1-celled; flower syncarpous, apopetalous, hypogynous, regular.

1. Flowers yellow or red; leaves pinnately lobed — *Papaver*
2. Flowers white; leaves palmately lobed — *Sanguinaria*

PAPÁVER — POPPY

(Latin name of the poppy)

Herbs with milky sap and lobed or dissected, alternate leaves; flowers large and showy; flower bud nodding; sepals 2, falling as the flower opens; petals 4–6; stamens many; pistil 1-celled with several projecting placentae; stigma disk-shaped; fruit a many-seeded capsule, opening by pores near the top. Pl. 3, fig. A.

Leaves basal; stem 1–3 dm. high; flowers 2.5–7.5 cm. wide. — **P. nudicaúle*

SANGUINÁRIA — BLOODROOT

(L. *sanguis,* blood, from the color of the sap)

Low perennial plant from a thick rhizome with reddish sap; leaves basal, palmately veined and lobed; flower white, solitary on a naked scape; sepals 2, falling as flower opens; petals 8; stamens many; ovary, 1-celled; fruit a many-seeded capsule. Pl. 3, fig. B. A single species, *S. canadénsis.*

Fumariáceae — Fumitory Family

Herbs with dissected leaves; sepals 2; petals 4, 1 or 2 of them spurred; stamens 6; ovary 1–2-celled; flower syncarpous, apopetalous, hypogynous.

1. Flower with two spurs — *Dicentra*
2. Flower with one spur — *Corydalis*

PLATE 3: A, Papaver nudicaule, 1, flower, 2, fruit; B, Sanguinaria canadensis, 1, flower, 2, fruit; C, Dicentra cucullaria, 1, flower, 2, fruit; D, Dicentra canadensis; E, Corydalis aurea; F, Polanisia graveolens, 1, flower, 2, fruit; G, Brassica nigra, 1, flower, 2, fruit; H, Brassica juncea; I, Draba caroliniana, 1, flower, 2, fruit; J. Polygala paucifolia, 1, flower, 2, fruit.

DICÉNTRA — BLEEDING HEART, DUTCHMAN'S BREECHES, SQUIRREL CORN

(Gr. *di-,* two, *kentron,* a spur)

[Bicuculla]

Perennial herbs with short, scaly rhizomes and dissected leaves; flowers white or pinkish, in drooping racemes; sepals 2, minute; petals 4, the two outer spurred at the base; stamens 6, the filaments united into two sets; fruit a 1-celled capsule. Pl. 3, figs. C and D.

1. Flowers 2.5–3 cm. long, bright pink-red — **D. spectábilis*
2. Flowers 1–2 cm. long, white to pink
   a. Flowers in a raceme, white
      (1) Spurs prominent and spreading — *D. cucullária*
      (2) Spurs round and short, sack-like — *D. canadénsis*
   b. Flowers in a branched cluster, pink — **D. exímia*

CORÝDALIS

(Gr. *korydalis,* a crested lark)

[Capnoides]

Erect, pale or glaucous herbs with compound dissected leaves; flowers in racemes, yellow or pinkish, irregular; sepals 2, small; petals 4, one of the outer spurred at the base; stamens 6, in two sets; ovary 1-celled; fruit a many-seeded capsule. Pl. 3, fig. E.

1. Flowers pink — *C. sempérvirens*
2. Flowers yellow
   a. Flowers 4–5 mm. long — *C. micrántha*
   b. Flowers 10–12 mm. long — *C. aúrea*

Capparidáceae — Caper Family

Herbs with compound leaves; sepals 4; petals 4; stamens 9–12; ovary 1-celled; flower syncarpous, apopetalous, hypogynous, regular.

POLANÍSIA

(Gr. *polos,* pole, *anisos,* unequal, probably from the unequal stamens)

Annual, glandular or clammy herbs with a disagreeable odor; leaves alternate, mostly compound; flowers in leafy racemes, pinkish; sepals 4; petals 4, notched at the apex; stamens 8–32, unequal; fruit a turgid capsule, many-seeded. Pl. 3, fig. F.

Strong-scented herb; leaves trifoliolate; petals yellowish. *P. gravéolens*

Cruciferae — Mustard Family

[Brassicaceae]

Herbs; sepals 4; petals 4; stamens 4 or 6, 2 shorter; ovary 2-celled; flower syncarpous, apopetalous, hypogynous, regular.

I. Pods less than 3 times as long as broad, nearly orbicular to obovoid or triangular in outline.
  1. Pods thickened, with rounded or convex faces
    a. Pods nearly orbicular, 2-seeded; pedicels 2–4 mm. long — *Alyssum*
    b. Pods obovoid, several seeded; pedicels 8–16 mm. long — *Camelina*
  2. Pods flat and thin
    a. Pods blunt or notched at the apex, glabrous
      (1) Pods wedge-shaped or triangular — *Capsella*
      (2) Pods nearly orbicular, more or less winged
        (a) Pods large, 8–15 mm. long, several-seeded — *Thlaspi*
        (b) Pods small, 1.5–3 mm. long, 2-seeded — *Lepidium*
    b. Pods narrowing towards the apex, not notched, pubescent — *Lobularia*

II. Pods oblong to linear
  1. Flowers purplish — *Iodanthus*
  2. Flowers yellow to yellowish-white
    a. Pods terete
      (1) Pods thickish, 2–6 mm. in diameter — *Brassica*
      (2) Pods linear, about 1 mm. in diameter — *Sisymbrium*
    b. Pods four-angled — *Barbarea*
    c. Pods flattened — *Draba*
  3. Flowers pure white to pinkish-white
    a. Plant aquatic — *Radicula*
    b. Plant terrestrial
      (1) Flowers on a leafless stem — *Draba*
      (2) Flowers on a leafy stem
        (a) Stem bulbous at base, leafy throughout — *Cardamine*
        (b) Stem not bulbous at base
          x. Leaves entire to pinnately cut — *Arabis*
          y. Leaves palmately divided — *Dentaria*

ALÝSSUM

(Gr. *alyssos,* curing madness, probably from supposed medical properties)

Low, stellate pubescent, annual or perennial herbs with small, entire leaves and numerous yellow or whitish flowers in racemes; pods small, orbicular, with 1–2 seeds in each cell. Pl. 4, fig. A.

1. Pods pubescent, slightly notched at the apex — *A. alyssóides*
2. Pods glabrous, not notched at the apex — *A. saxátile*

CAMÉLINA — FALSE FLAX

(Gr. *chamai,* dwarf, *linon,* flax)

Erect annual herbs with entire or toothed leaves, the upper with sagittate clasping bases; flowers small, yellow; pods obovoid or pear-shaped, slightly flattened, on pedicels 1.2–2 cm. long. A single species in our flora, *C. satíva.*

CAPSÉLLA — SHEPHERD'S PURSE

(L. *capsa,* a box, referring to the pod)

[Bursa]

Annual pubescent herbs with forked hairs; basal leaves lobed or pinnatifid, stem-leaves entire

or dentate, with clasping bases; flowers small, white; pods flat, obcordate-triangular. Pl. 4, fig. D. Only a single species in our flora, *C. búrsa-pastóris.*

THLÁSPI — PENNY CRESS

(Gr. *thlaspi,* cress, the seeds of which were crushed [*thlao*])

Erect, glabrous, annual herb with entire or dentate leaves, the basal petioled, the others sessile and clasping by auricled bases; flowers white; ripe pods nearly orbicular, 8–12 mm. wide, flat, broadly winged. Pl. 4, fig. B. Only a single species in our flora, *T. arvénse.*

LEPÍDIUM — PEPPERGRASS

(Gr. *lepidion,* a little scale, referring to the pods)

Annual or biennial, glabrous or pubescent herbs with toothed, lobed, or pinnatifid leaves; flowers small, in dense racemes, greenish or whitish; pod roundish, notched at the apex, flattened, more or less winged; seeds, 1 in each cell. Pl. 4, fig. C.

Leaves deeply cut; petals lacking — *L. apétalum*

PLATE 4: A, Alyssum alyssoides; B, Thlaspi arvense; C, Lepidium apetalum; D, Capsella bursa-pastoris; E, Iodanthus pinnatifidus; F, Barbarea stricta; G, Radicula nasturtium-aquaticum; H, Cardamine bulbosa; I, Arabis hirsuta; J. Dentaria laciniata.

LOBULÁRIA — SWEET ALYSSUM

(L. *lobulus,* a little lobe, probably referring to the forked hairs)

Low, freely branching annual with forked hairs and entire leaves; flowers white in dense terminal racemes, sweet-scented; pod oval or nearly orbicular, pointed; seeds 1 in each cell. One commonly cultivated species, **L. marítima.*

IODÁNTHUS — PURPLE ROCKET

(Gr. *ion,* violet, *anthos,* flower, referring to the color)

Glabrous, perennial herb with ovate to lanceolate, dentate leaves or some of them lyrate-pinnatifid; flowers purplish; pods 1.8–2 cm. long, pointed, on short divergent pedicels. Pl. 4, fig. E. A single species, *I. pinnatífidus.*

BRÁSSICA — MUSTARD

(Latin name of the cabbage)

Erect, branching, annual or perennial herbs with pinnatifid basal leaves and dentate or nearly entire stem leaves; flowers yellow, showy, in elongated racemes; pods nearly terete or 4-sided, tipped with a conic, often 1-seeded, beak. Pl. 3, figs. G and H.

1. Upper leaves clasping
   - a. Leaves smooth, glaucous, not eared at base — **B. olerácea*
   - b. Leaves hairy, eared at base — **B. campéstris*
2. Upper leaves not clasping
   - a. Beak of pod sword-like; pods much constricted between seeds — **B. álba*
   - b. Beak round; pods not constricted between seeds
     - (1) Pods 2.5–5 cm. long; beak 6–15 mm. long — *B. júncea*
     - (2) Pods 1–1.5 cm. long; beak 2–10 mm. long
       - (a) Beak 2–4 mm. long — *B. nígra*
       - (b) Beak 8–10 mm. long — *B. arvénsis*

SISÝMBRIUM — HEDGE MUSTARD

(Gr. *Sisymbron,* some sweet-smelling plant)

Mostly annual and biennial herbs with small, yellowish flowers; pods mostly linear, often very long, terete or somewhat flattened; seeds oblong, 1 or 2 rows in each cell.

1. Pods 1–1.5 cm. long — *S. officinále*
2. Pods 6–10 cm. long — *S. altíssimum*

BARBARÉA — YELLOW ROCKET

(Named for Saint Barbara)

Erect, glabrous biennial or perennial herbs with angled stems and pinnatifid leaves; flowers yellow, in racemes; pods linear, 4-angled, each valve keeled or ribbed; seeds in a single row in each cell. Pl. 4, fig. F.

1. Pods spreading — *B. vulgáris*
2. Pods erect, appressed — *B. stricta*

DRÁBA — WHITLOW GRASS

(Gr. *drabe,* name for a plant of the mustard family)

Low, tufted, annual or perennial herbs, stellate-pubescent; leaves entire or dentate, flowers white or yellow; pod elliptic, oblong, or linear, flat, sometimes slightly twisted; seeds in two rows in each cell. Pl. 3, fig. I.

1. Flowers white; stem leafy at base only — *D. caroliniána*
2. Flowers yellow, stem leafy — *D. nemorósa*

RADÍCULA — WATER CRESS

(L. dim. of *radix,* root, radish)

[Roripa]

Aquatic or marsh plants with pinnate or pinnatifid leaves, usually glabrous; flowers white or yellow; pod short or elongated, terete or nearly so; seeds in two irregular rows in each cell. Pl. 4, fig. G.

Leaves pinnate, of 3–9 leaflets; flowers white — *R. nastúrtium-aquáticum*

CARDÁMINE — BITTER CRESS

(Gr. *kardamine,* a cress-like herb)

Mostly glabrous, perennial herbs, growing along streams or in wet places, with entire, lobed, or divided leaves; flowers white or purplish; pods linear, flattened; seeds in a single row in each cell. Pl. 4, fig. H.

Basal leaves oval; stem leaves oblong; flowers white — *C. bulbósa*

ÁRABIS — ROCK CRESS

(Referring to Arabia)

Annual or perennial, glabrous or pubescent herbs with entire, lobed, or pinnatifid leaves; flowers white or purplish; pod linear, flattened, the valves plane or convex and mostly 1-nerved; seeds in one or two rows in each cell. Pl. 4, fig. 1.

1. Pods ascending or erect
   a. Basal leaves pinnatifid — *A. lyráta*
   b. Basal leaves mostly dentate
      (1) Pods ascending
         (a) Seeds wing-margined — *A. brachycárpa*
         (b) Seeds not wing-margined — *A. dentáta*
      (2) Pods erect, appressed — *A. hirsúta*
2. Pods spreading, recurved — *A. laevigáta*

DENTÁRIA — TOOTHWORT

(L. *dentaria,* an herb that cures the toothache)

Perennial herbs of damp woodlands, with fleshy, scaly or toothed rhizomes, and 2–3 compound leaves above the middle of the stem; flowers large, white or rose to purple; pod lanceolate, flat; style elongated, seeds in one row in each cell. Pl. 4, fig. J.

1. Stem leaves 3, the divisions lanceolate — *D. laciniáta*
2. Stem leaves 2, the divisions ovate — *D. diphýlla*

Polygaláceae — Milkwort Family

Low, bitter herbs with simple entire leaves; flowers in racemes or spikes, white to pink or rose-purple, irregular; sepals 5, 2 larger and colored like the petals; petals 3, united with each other and with the stamen tube; stamens 6–8, their filaments united into one or two sets; ovary 2-celled; fruit a flattened, 2-seeded capsule; flowers syncarpous, slightly sympetalous, hypogynous, irregular.

POLÝGALA — MILKWORT

(Gr. *polys,* much, *gala,* milk)

Characteristics of the family. Pl. 3, fig. J.

1. Flowers many in a spike, white — *P. Sénega*
2. Flowers 1–4 in a raceme, rose-purple — *P. paucifólia*

Sarraceniales Pitcher Plant Order

Sarraceniáceae — Pitcher Plant Family

Herbs with pitcher-like leaves; sepals 4–5; petals 5; stamens many; ovary 3–5-celled; flower syncarpous, apopetalous, hypogynous, regular.

SARRACÉNIA — PITCHER PLANT

(Named for Dr. Sarracin, a Canadian botanist)

Perennial herbs with basal, hollow, pitcher- or trumpet-shaped leaves, and a naked scape with a solitary nodding flower; sepals 5, with 3 bracts at the base; petals 5, incurved; stamens many; ovary compound, 5-celled; style terminating in an expanded umbrella-shaped body; fruit a many-seeded capsule. Our only species, *S. purpúrea.*

Urticales Nettle Order

Moráceae — Mulberry Family

Trees with simple leaves and usually a milky juice; sepals 4–5; petals 0; stamens 4–5; ovary 1-celled; flowers syncarpous, apetalous, hypogynous.

MÓRUS — MULBERRY

(Gr. *morea,* mulberry tree)

Trees or shrubs with milky sap and alternate, dentate or lobed leaves; flowers in axillary catkin-like spikes, monoecious or dioecious; sepals 4; petals 0; stamens 4, opposite the sepals; ovary 1-celled; styles 2; fruit an achene surrounded by the fleshy calyx, the whole spike becoming a fleshy multiple fruit.

1. Leaves rough above, pubescent beneath; native tree — *M. rúbra*
2. Leaves glabrous or nearly so; cultivated tree — **M. álba*

Ulmáceae — Elm Family

Trees with alternate, simple, serrate leaves; sepals 3–9; petals 0; stamens 3–9; ovary 1-celled; stigmas 2; flowers perfect to polygamous, syncarpous, apetalous, hypogynous.

1. Fruits winged, in clusters — *Ulmus*
2. Fruits globose, single — *Celtis*

ÚLMUS — ELM

(L. *ulmus,* elm tree)

Trees with alternate, 2-ranked, doubly-serrate leaves with straight pinnate veins; flowers small, in clusters, appearing before the leaves; calyx campanulate, somewhat oblique; sepals 4–9, united; petals none; stamens 4–9, opposite the sepals; ovary 1–2-celled; styles 2; fruit a round or elliptic samara. Pl. 5, fig. H.

1. Pedicels much longer than the flowers; margin of samara ciliate
   a. Flowers in racemes; samara large, its surface pubescent — *U. racemósa*
   b. Flowers in umbel-like clusters; surface of samara smooth — *U. americána*
2. Pedicels short; flowers in dense clusters; wing and margin of samara smooth
   a. Bud scales brown hairy; nutlet pubescent with brown rusty hairs — *U. fúlva*
   b. Bud scales nearly glabrous; samara wholly glabrous — **U. púmila*

CÉLTIS — HACKBERRY

(L. *celtis,* lotus tree)

Trees or shrubs; leaves simple, alternate, 3–5 nerved; flowers greenish, borne in the axils of the leaves, generally monoecious, the staminate in clusters, the pistillate solitary; sepals 4–6; petals none; stamens 4–6, opposite the sepals; ovary 1-celled; stigmas 2, long; fruit a globose drupe. Pl. 5, fig. G. Our only species, *C. occidentális.*

Geraniales Geranium Order

Geraniáceae — Geranium Family

Herbs with deeply cut leaves and perfect flowers; sepals 5; petals 5; stamens 5–10; ovary 5-celled; flower syncarpous, apopetalous, hypogynous, regular.

1. Stamens with anthers 10 — *Geranium*
2. Stamens with anthers 5 — *Erodium*

PLATE 5: A, Geranium maculatum, 1, flower, 2, fruit; B, Oxalis stricta, 1, flower, 2, fruit; C, Ruta graveolens, 1, flower, 2, fruit; D, Ptelea trifoliata, 1, flower, 2, fruit; E, Euphorbia corollata; F, Euphorbia glyptosperma, 1, flower, 2, fruit; G, Celtis occidentalis, 1, pistillate flower, 2, staminate flower, 3, fruit; H, Ulmus americana, 1, cluster, 2, flower, 3, fruit.

GERÁNIUM — GERANIUM, CRANESBILL

(Gr. *geranion,* crane's bill, geranium)

Annual or perennial herbs with palmately lobed or cleft leaves; peduncles 1–3 flowered; flowers regular, sepals 5; petals 5; stamens 10 (rarely 5), 5 longer with glands at their base; ovary 5-lobed, 5-celled; fruit opening from the base into 5 elastic, curved segments. Pl. 5, fig. A.

1. Flowers 2–3 cm. broad — *G. maculátum*
2. Flowers 5-12 mm. broad — *G. Bicknélli*

ERÓDIUM — STORKSBILL

(Gr. *erodios,* heron)

Herbs with alternate, pinnately compound, stipulate leaves and nearly regular umbellate flowers; sepals 5; petals 5, the two upper slightly smaller; anther-bearing stamens 5, alternating with 5 sterile filaments; ovary 5-lobed, 5-celled; fruit opening from the base into 5 elastic twisted segements. Only one species in our flora, *E. cicutárium.*

Oxalidáceae — Oxalis Family

Herbs or shrubs with compound leaves; sepals 5; petals 5; stamens 10–15; ovary 5-celled; flower syncarpous, apopetalous, hypogynous, regular.

ÓXALIS — OXALIS, WOOD SORREL

(Gr. *oxalis,* sorrel)

Perennial herbs with scaly bulbs or creeping rhizomes and compound, usually trifoliolate leaves; flowers cymose, yellow, rose-purple, or white; sepals 5; petals 5; stamens 10, 5 longer; filaments generally united towards the base; ovary 5-celled; fruit a loculicidal capsule. Pl. 5, fig. B.

1. Flowers yellow, on leafy stems — *O. stricta*
2. Flowers white, pink or purple, on leafless stems
   a. Flowers rose-purple, 3–12 together — *O. violácea*
   b. Flowers pink, rarely white, single — *O. acetoséllа*

Rutáceae — Rue Family

Trees, shrubs, or herbs, usually with compound leaves; sepals 4–5 or none; petals 4–5; stamens 4–10; pistils distinct, 2–5 or compound; flower apocarpous or syncarpous, apopetalous, hypogynous, regular or irregular.

1. Herbs
   a. Flowers greenish-yellow; petals usually 4 — *Ruta*
   b. Flowers red-purple to white; petals 5 — *Dictamnus*
2. Shrubs or small trees
   a. Leaflets 3; branches smooth — *Ptelea*
   b. Leaflets 9–11; branches prickly — *Zanthoxylum*

RÚTA — RUE

(Latin name of the rue)

Perennial, strong-scented, herbaceous or somewhat woody plants; leaves simple, 3-foliolate or pinnately compound, glandular-dotted; flowers small, in terminal clusters; sepals 4–5; petals 4–5, often toothed or fringed; stamens 8–10; ovary 4–5-celled; fruit a 4–5-lobed capsule. Pl. 5, fig. C. A rarely cultivated species, **R. gravéolens.*

DICTÁMNUS — DITTANY, FRAXINELLA

(The Greek name)

Perennial, more or less woody at the base; leaves alternate, pinnately compound, glandular-punctate; flowers in terminal racemes, white, pink, or rose-violet; sepals 5; petals 5, the lowest one declined; stamens 10, usually curved upward; ovary 5-lobed and 5-celled; fruit a hard capsule. A commonly cultivated species, **D. fraxinella.*

PTÉLEA — HOP TREE

(Greek name of the elm)

Shrubs or small trees, with alternate trifoliolate leaves; flowers in compound cymes, greenish-white, polygamous; sepals 3–5; petals 3–5; stamens 3–5, alternating with the petals; ovary 2-celled; fruit a nearly orbicular, broad-winged samara. Pl. 5, fig. D. A commonly cultivated species, **P. trifoliáta.*

ZANTHÓXYLUM — PRICKLY ASH

(Gr. *xanthos,* yellow, *xylon,* wood)

Prickly trees or shrubs with alternate, pinnately compound leaves; flowers in axillary clusters, small, greenish, dioecious; sepals lacking; petals 4–5, stamens 4–5, alternate with petals; pistils 2–5, separate; fruit fleshy, dehiscent, 2-valved, 1–2-seeded. A single species in our flora, *Z. americánum.*

Euphorbiáceae — Spurge Family

Herbs, shrubs, or trees with acrid, often milky, juice; sepals 3–10 or 0, sometimes petal-like; petals usually 0; stamens 1–many; carpels 3, united; styles 3 or style-branches 6; flowers hypogynous sometimes with a disk, monoecious or dioecious, often greatly reduced.

EUPHÓRBIA — SPURGE

(Gr. *euphorbion,* spurge)

Annual or perennial herbs with milky sap and alternate or opposite leaves, the uppermost sometimes whorled; flowers monoecious, borne in a 4–5-lobed, cup-shaped involucre (resembling a calyx) bearing glands, with or without petal-like appendages in its sinuses; staminate flowers numerous, each consisting of a single, naked stamen; pistillate flower solitary, naked, soon projecting from the middle of the involucre; ovary 3-lobed, 3-celled; styles 3, each 2-cleft; fruit splitting into 3 1-seeded valves. Pl. 5, figs. E and F.

1. Glands of the involucre with conspicuous petal-like appendages — *E. corollàta*
2. Glands without petal-like appendages
   a. Involucres in umbel-like clusters — *E. cyparíssias*
   b. Involucres axillary, minute — *E. glyptospérma*

Violales Violet Order

Cistáceae — Rockrose Family

Low shrubs or herbs with simple leaves; sepals 5, 2 smaller or sometimes wanting; petals 3–5; stamens 3–many; pod 1-celled or partly 3-celled; flowers perfect, syncarpous, apopetalous, hypogynous, regular.

HUDSÓNIA — HUDSONIA

(Named for Hudson, an English botanist)

Low, heath-like shrubs covered with scale-like, persistent, pubescent leaves; flowers bright yellow, numerous towards the ends of the branches; sepals 3; petals 5; stamens many; ovary 1-celled; fruit a 3-valved capsule included in the calyx, few-seeded. A single species in our flora, *H. tomentósa.*

Violáceae — Violet Family

Herbs with perfect flowers; sepals 5; petals 5, one of them spurred; stamens 5, two of them appendaged at the base; pistil 1; ovary 1-celled with 3 parietal placentae; flowers perfect, syncarpous, apopetalous, hypogynous, irregular.

VÍOLA — VIOLET

(L. *viola,* the violet)

With the characteristics of the family, sepals prolonged backwards, some of the flowers usually apetalous and cleistogamous.

1. Flowering stems not leafy
   a. Leaves cut into linear lobes
      (1) Flower flat, petals not bearded — *V. pedàta*
      (2) Petals bearded towards base — *V. pedatífida*
   b. Leaves entire, crenate, or dentate, sometimes cut at base
      (1) Petals blue or violet, rarely white
         (a) Leaves mostly lanceolate, base often cut — *V. sagittàta*
         (b) Leaves reniform to ovate, base not cut
            x. Plant hairy — *V. sorória*
            y. Plant nearly or quite glabrous
               (x) Spur much shorter than the petals; rootstock stout
                  m. Beard of lateral petals strongly knobbed; cleistogamous flowers long and slender — *V. cuculláta*
                  n. Beard of lateral petals not strongly knobbed; cleistogamous flowers not elongated
                     (m) Leaves pointed at end, large; spurred petal not bearded — *V. papilionácea*
                     (n) Leaves rounded at end, 3–6 cm. wide; spurred petal bearded — *V. nephrophýlla*
               (y) Spur nearly as long as the petals; rootstock very slender — *V. Selkírkii*
      (2) Petals white, veins often purplish
         (a) Leaves linear to ovate, not cordate at the base
            x. Leaves linear to lanceolate — *V. lanceoláta*
            y. Leaves ovate — *V. primulifólia*
         (b) Leaves heart-shaped to reniform
            x. Leaves essentially glabrous
               (x) Petioles and scapes glabrous, usually tinged with red; lateral petals beardless — *V. blánda*

(y) Petioles and scapes somewhat pubescent; lateral petals with a few hairs — *V. pállens*

y. Leaves obviously pubescent

(x) Leaves broadly heart-shaped; lateral petals bearded — *V. incógnita*

(y) Leaves round-reniform; lateral petals not bearded — *V. renifólia*

2. Flowering stems leafy, the flowers on axillary peduncles

a. Stipules entire

(1) Petals yellow — *V. pubéscens*

(2) Petals white or pinkish — *V. rugulósa*

b. Stipules toothed or cut

(1) Spur short, blunt

(a) Tip of style slender; petals blue or violet

x. Plant smooth or nearly so — *V. conspérsa*

y. Plant hairy or puberulent — *V. adúnca*

(b) Tip of style much enlarged; petals flat, variously colored, cultivated — **V. trícolor*

(2) Spur long, acute, cultivated — **V. cornúta*

PLATE 6: A, Dianthus barbatus; B, Silene antirrhina; C, Lychnis alba; D, Stellaria media; E, Cerastium nutans; F, Claytonia virginica; G, Portulaca grandiflora; H, Oxybaphus nyctagineus; I, Populus deltoides, 1, flower, 2, fruit; J, Salix longifolia, 1, flower, 2, fruit.

Caryophyllales Pink Order

Caryophylláceae — Pink Family

Herbs with opposite entire leaves; sepals 4–5; petals 4–5, rarely none; stamens 4–10; ovary 1-celled, rarely 3–5-celled; flower syncarpous, apopetalous, hypogynous, regular.

1. Sepals united

a. Styles 2 — *Dianthus*

b. Styles 3 — *Silene*

c. Styles 4–5 — *Lychnis*

2. Sepals separate

a. Petals entire — *Arenaria*

b. Petals deeply 2-cleft or parted

(1) Pod ovoid to oblong, opening by valves — *Stellaria*

(2) Pod cylindric, opening by teeth — *Cerastium*

DIÁNTHUS — PINK, SWEET WILLIAM

(Gr. *dio-*, of Jupiter, *anthos*, flower)

Herbs with opposite, mostly narrow leaves; flowers terminal, solitary or cymose-paniculate; calyx tubular, 5-toothed; petals 5, long-clawed, dentate or crenate; ovary 1-celled; styles 2; fruit a stalked capsule, dehiscent by 4 teeth at the top. Pl. 7, fig. A.

Petals toothed; flowers in a flat-topped cluster — **D. barbátus*

SILÉNE — CATCHFLY

(Gr. *Seilenos*, a companion of Bacchus)

Annual or perennial herbs with cymose or solitary flowers; calyx more or less inflated, 5-toothed; petals 5, generally notched or toothed or sometimes fringed at the end and with a small scale

at the base of the blade; stamens 10; ovary 1-celled, sometimes 3-celled at the base; styles 3; capsule opening by 3 or 6 apical teeth. Pl. 6, fig. B.

1. Leaves opposite
   a. Stem sticky between the nodes; flowers pink, day-flowering — *S. antirrhina*
   b. Stem with sticky hairs all over; flowers white, night-flowering — *S. noctiflora*
2. Leaves in whorls of 4 — *S. stellata*

LYCHNIS — RAGGED ROBIN

(Gr. *lychnos,* lamp, from the use of one species for wicking)

Biennial or perennial, often viscid-pubescent herbs; calyx tubular, ovoid or inflated, 5-toothed; petals 5, with a narrow claw, the blade notched or toothed; stamens 10; ovary 1-celled or incompletely 4–5-celled; styles 5 (rarely 4); capsule opening by 10 apical teeth. Pl. 6, fig. C.

1. Flowers white, dioecious, petals 2-lobed — *L. alba*
2. Flowers red; petals 4-lobed — **L. flos-cuculi*

ARENARIA — SANDWORT

(L. *arena,* sand, the habitat of many species)

[Moehringia]

Low perennial herbs with mostly sessile leaves and small, white, cymose or solitary flowers; sepals 5; petals 5, entire or barely notched, rarely none; stamens 10; ovary 1-celled; styles 3 (rarely more or fewer); capsule splitting into as many valves as styles or twice as many.

Leaves oval or oblong; flowers single or few in a cluster, white — *A. lateriflora*

STELLARIA — STARWORT, CHICKWEED

(L. *stella,* a star)

[Alsine]

Mostly low and diffuse, annual or perennial herbs with small, white, cymose flowers; sepals 4–5; petals 4–5, usually deeply 2-cleft or 2-parted; stamens 8–10; ovary 1-celled; styles 3 (rarely 4–5); capsule ovoid or oblong, splitting into twice as many valves as styles. Pl. 6, fig. D.

1. Leaves broad, ovate or oval — *S. media*
2. Leaves narrow, linear — *S. longifolia*

CERASTIUM — MOUSE-EAR CHICKWEED

(Gr. *keration,* a little horn, from the shape of the capsule)

Annual or perennial, generally pubescent herbs with terminal cymes of white flowers; sepals 5, rarely 4; petals of the same number, 2-lobed or 2-cleft; stamens 10, rarely less; ovary 1-celled; styles as many as the sepals and opposite them; capsule usually cylindrical, often curved, opening by 10 (sometimes 8) apical teeth. Pl. 6, fig. E.

1. Petals longer than the sepals
   a. Flowers 4–5 mm. wide — *C. nutans*
   b. Flowers 8–10 mm. wide — *C. arvense*
2. Petals equalling or shorter than the sepals — *C. vulgatum*

Portulacáceae — Purslane Family

Fleshy herbs; sepals 2, rarely 5; petals 4–5; stamens 4–30; ovary 1-celled; flower syncarpous, apopetalous, hypogynous or somewhat epigynous, regular or somewhat irregular.

1. Leaves lanceolate to spatulate; calyx persistent
   a. Flowers white to pink; stamens 5 — *Claytonia*
   b. Flowers mostly yellow or red; stamens more than 5 — *Portulaca*
2. Leaves linear terete, calyx deciduous — *Talinum*

CLAYTONIA — SPRING BEAUTY

(Named for Clayton, an American botanist)

Perennial herbs from slightly flattened corms; leaves elongated, somewhat succulent; flowers in racemes, rose color, with deeper veins; sepals 2, ovate; petals 5; stamens 5, attached to the base of the petals; style 3-cleft; ovary 1-celled; capsule 3-valved, 3–6-seeded. Pl. 6, fig. F.

1. Leaves linear — *C. virginica*
2. Leaves ovate or ovate-lanceolate — *C. caroliniana*

PORTULÁCA — PURSLANE, MOSS ROSE

(L. *portulaca,* purslane)

Low, fleshy, annual herbs with mostly scattered leaves; sepals 2, united at the base and adnate to the ovary; petals 4–6 (mostly 5); stamens 7–20; style deeply 3–8-cleft or parted; ovary 1-celled, plancenta basal; capsule nearly globose, opening by a lid, many-seeded. Pl. 6, fig. G.

1. Flowers 5–6 mm. wide, yellow; leaves flat, wedge-shaped — *P. olerácea*
2. Flowers 3–5 cm. wide, many-colored; leaves terete, subulate — **P. grandiflóra*

TALÍNUM

(Latinized form of the native Senegal name)

Scapose herbs with linear, fleshy, nearly terete leaves; flowers cymose, white or pink; sepals 2, ovate; petals 5, ephemeral; stamens 5–many; style 3-lobed; ovary 3-celled at the base, with a central, globose placenta; capsule 3-valved, many-seeded. Only a single species in our flora, *T. rugospérmum.*

Polygonales Buckwheat Order

Polygonáceae — Buckwheat Family

Herbs with simple leaves; sepals 2–6, often somewhat united and petal-like; petals 0; stamens 2–9; ovary 1-celled; fruit an achene; flower syncarpous, apetalous, hypogynous, regular.

1. Leaves round, 3 dm. or more across; petioles fleshy, sour — *Rheum*
2. Leaves lanceolate or lance-oblong; petioles not fleshy — *Rumex*

RHÉUM — PIE PLANT, RHUBARB

(Gr. *rheon,* name of a medicinal plant)

Stout herbs with large, entire or deeply lobed leaves; petioles stout, with prominent sheaths at the base; flowers numerous, in panicled racemes, greenish or whitish; sepals 6, the inner enlarging somewhat in fruit, the outer reflexed; stamens mostly 9; styles 3; ovary 1-celled; achene somewhat winged.

1. Leaves deeply lobed
   a. Leaves rough — **R. palmátum*
   b. Leaves hairy — **R. officinále*
2. Leaves entire or nearly so — **R. rhapónticum*

RÚMEX — SHEEP SORREL, DOCK

(L. *rumex,* sorrel)

Perennial or annual herbs with alternate, simple leaves, the stipules forming a sheath (ocrea) surrounding the stem; flowers greenish or yellowish, perfect or dioecious, commonly whorled in panicled racemes with jointed pedicels; sepals 6, the three inner enlarging, becoming veiny and often bearing a grain-like tubercle on the back; petals 0; stamens 6; styles 3; ovary 1-celled; fruit a 3-sided achene.

1. Leaves arrow-shaped, sour — *R. acetosélla*
2. Leaves lanceolate or lance-oblong, somewhat bitter
   a. Leaves curled at edges; valves of flower grain-bearing — *R. crispus*
   b. Leaves hardly curled; usually 1 valve grain-bearing — *R. obtusifólius*

Chenopodiales Goosefoot Order

Nyctagináceae — Four-o'clock Family

Herbs with simple leaves; sepals 5, united into a corolla-like tube; petals 0; stamens 3–5; ovary 1-celled; fruit 1-seeded, achene-like, enclosed in the base of the calyx; flower syncarpous, synsepalous, apetalous, apparently epigynous, usually regular.

OXÝBAPHUS — WILD FOUR-O'CLOCK

(Gr. *oxybaphon,* a vinegar saucer, from the shape of the involucre)

[Allionia]

Perennial herbs with large, thickened roots and opposite leaves; flowers subtended by a calyx-like, 5-lobed involucre, which enlarges after flowering; sepals 5, united into a bell-shaped, rose or

purplish calyx, constricted above the ovary, deciduous; stamens 3–5; style slender; fruit achene-like, several-ribbed or angled. Pl. 7, fig. H.

Flowers pink; leaves ovate — *O. nyctagíneus*

Salicales Willow Order

Salicáceae — Willow Family

Trees or shrubs with simple leaves; sepals 0; petals 0; stamens 1–60; ovary 1-celled; capsule 2–4-valved; seeds hairy; flowers dioecious, calyx and corolla both lacking.

1. Bracts entire; stamens usually less than 10 — *Sálix*
2. Bracts cut or fringed; stamens usually more than 10 — *Pópulus*

SÁLIX — WILLOW

(L. *salix*, a willow tree)

Trees or shrubs with alternate, simple, entire or serrate, mostly long and pointed leaves; buds covered by a single scale; flowers in catkins, dioecious, without perianth; stamens 1–10, with 1 or 2 glands at the base; pistillate flower with a gland at the base; ovary 1-celled; stigmas 2, more or less 2-lobed; fruit a capsule; seeds hairy. Pl. 7, fig. J.†

1. Leaves and stipules with glands — *S. lúcida*
2. Leaves and stipules without glands
   - a. Leaves glabrous on both sides when mature
     - (1) Leaves narrow, linear-lanceolate; low shrub — *S. longifólia*
     - (2) Leaves broader, lanceolate to ovate
       - (a) Leaves oblong-lanceolate, merely acute — *S. díscolor*
       - (b) Leaves acuminate — *S. nígra*
   - b. Leaves pubescent or tomentose below
     - (1) Leaves oblong; low bog shrub — *S. cándida*
     - (2) Leaves broadly lanceolate or oblanceolate
       - (a) Leaves elliptic to lanceolate — *S. Bebbiána*
       - (b) Leaves oblanceolate
         - x. Leaves 5–10 cm. long — *S. húmilis*
         - y. Leaves 2–5 cm. long — *S. trístis*

PÓPULUS — POPLAR, COTTONWOOD, ASPEN

(L. *populus*, a poplar tree)

Trees with alternate, ovate or more or less heart-shaped, long-petioled leaves; buds scaly, covered with a resinous varnish; flowers in catkins, dioecious, each flower borne in a cup-shaped, more or less oblique disk, subtended by a fringed or cut bract; stamens 8–60; pistil of 2–4 carpels; stigmas 2–4-lobed or entire; ovary 1-celled; fruit a capsule; seeds hairy. Pl. 7, fig. I.

1. Leaves densely white-tomentose beneath, retaining the tomentum in age — **P. álba*
2. Leaves not white-tomentose when mature, glabrous or sparingly pubescent
   - a. Leaves with rounded or channeled petioles
     - (1) Leaves ovate to ovate-lanceolate; petioles and lower surface not hairy — *P. balsamífera*
     - (2) Leaves broader, cordate; petioles and lower surface pubescent — **P. cándicans*
   - b. Leaves with petioles strongly flattened laterally, especially near the blade
     - (1) Leaves broadly ovate to orbicular, rounded or subcordate at the base, short-pointed at the apex
       - (a) Margin of leaf coarsely undulate-dentate — *P. grandidentáta*
       - (b) Margin of leaf finely crenulate all around — *P. tremuloídes*
     - (2) Leaves deltoid to rhombic-ovate, truncate or broadly cuneate at the base, abruptly acuminate at the apex
       - (a) Leaves broadly deltoid, truncate at the base; branches widely spreading; crown broad — *P. deltoídes*

† No attempt has been made to make a complete key to the willows since it is impossible to determine them without the fruit.

(b) Leaves rhombic to rhombic-ovate, broadly wedge-shaped or rounded at the base; branches ascending to erect; crown narrower
x. Leaves rhombic, nearly as broad or broader than long, 3–7 cm. long; crown very narrow **P. nígra* var. *itálica*
y. Leaves rhombic-ovate, longer than broad, 7–14 cm. long; crown pyramidal **P. Eugénei*

Ericales Heath Order

Ericáceae — Heath Family

Herbs or shrubs with simple leaves, usually evergreen; sepals 4–5; petals 4–5; stamens 4–10; ovary 2–5-celled; flower syncarpous, apopetalous or sympetalous, hypogynous or epigynous, regular.

I. Low herbs with basal leaves only *Pýrola*
II. Leafy shrubs
1. Flower hypogynous, i.e., ovary within the corolla
a. Petals separate *Ledum*
b. Petals united
(1) Corolla saucer-shaped *Kalmia*
(2) Corolla bell-shaped or cylindric
(a) Erect shrubs
x. Stamen filaments bearded *Andromeda*
y. Stamen filaments smooth *Chamaedaphne*
(b) Trailing shrubs
x. Corolla salverform *Epigaea*
y. Corolla jug-shaped *Arctostaphylos*
2. Flower epigynous, i.e., ovary below the corolla
a. Petals nearly or quite separate, reflexed; low trailing bog-plants *Vaccinium*
b. Petals clearly united
(1) Ovary half-inferior; low trailing aromatic shrub *Chiogenes*
(2) Ovary wholly inferior; erect shrubs
(a) Ovary 4–5-celled; seeds many; leaves not resinous *Vaccinium*
(b) Ovary 10-celled, 10-seeded; leaves resin-dotted *Gaylussacia*

PÝROLA — WINTERGREEN

(L. *pirum*, pear, referring to the leaves)

Low, smooth, evergreen, perennial herbs with slender rootstocks; leaves in a rosette, or some of them alternate on the base of the flowering stalk; flowers in a raceme, pink or white; sepals 5, united; petals 5, separate; stamens 10, the anthers inverted and opening by a pair of pores at the true base; ovary 5-celled; style long, often curved; stigma 5-lobed; fruit a loculicidal capsule with innumerable minute seeds. Pl. 6, fig. A.

1. Flowers greenish white; style straight *P. secúnda*
2. Flowers rose or purple; style bent *P. asarifólia*

LÉDUM — LABRADOR TEA

(Gr. *ledon*, an oriental shrub)

Low shrubs with alternate, entire, evergreen leaves, woolly beneath; flowers in terminal umbels, small, white, regular; sepals 5, very small; petals 5, separate; stamens 5–10; anthers unappendaged, opening by terminal pores; ovary 5-celled, superior; fruit a septicidal capsule with numerous thread-like seeds. Our only species, *L. groenlándicum*.

KÁLMIA — SWAMP LAUREL

(Named for Peter Kalm)

Evergreen shrubs with alternate or opposite, entire leaves; flowers in corymbs, rose-purple to nearly white; sepals 5, united; corolla wheel-shaped or shallow bell-shaped with 10 pouches in which the anthers are held until after the flower opens; anthers unappendaged, opening by terminal pores; ovary superior, 5-celled; style thread-like; fruit a septicidal capsule with numerous small, round seeds. The only species in our flora, *K. polifólia*.

ANDRÓMEDA — BOG ROSEMARY

(Named from Andromeda)

Small upright shrubs with alternate evergreen leaves; flowers in terminal clusters, white or pinkish; sepals 5, united; corolla jug-shaped with only the tips of the petals free; stamens 10; anthers awned at the summit, opening by terminal pores; ovary 5-celled, superior; style short; stigma unlobed; fruit a loculicidal capsule with numerous small, flat seeds. The only species in our flora, *A. glaucophýlla.*

CHAMAEDÁPHNE — LEATHERLEAF

(Gr. *chamae,* on the ground, *Daphne*)

A low, erect shrub with alternate, scurfy, entire, evergreen leaves; flowers white, in a loose terminal raceme; sepals 5, separate, persistent; corolla cylindric; stamens 10; anthers with prolonged pollen sacs, opening by terminal pores; ovary superior, 5-celled; style straight; stigma unlobed; fruit a loculicidal capsule with numerous small seeds. The only species, *C. calyculáta.*

PLATE 7: A, Pyrola secunda; B, Arctostaphylos Uva-ursi, 1, flower, 2, fruit; C, Vaccinium pennsylvanicum, 1, flower, 2, fruit; D, Primula mistassinica; E, Dodecatheon Meadia; F, Trientalis americana; G, Androsace occidentalis; H, Forsythia suspensa.

EPIGAÉA — TRAILING ARBUTUS

(Gr. *epigeios,* on the earth)

Creeping undershrubs with broad, entire, alternate, evergreen leaves; flowers in a dense terminal cluster, pink, fragrant; sepals 5, large, persistent; corolla salver-shaped with 5 spreading petals; stamens 10; anthers oblong, unappendaged; ovary superior, 5-lobed, 5-celled; style straight; stigma unlobed; fruit a fleshy berry-like capsule, finally loculicidal; seeds numerous, small, oval. Our only species, *E. répens.*

ARCTOSTÁPHYLOS — BEARBERRY

(Gr. *arctos,* bear, *staphyle,* grape)

Shrubs or small trees with alternate, entire, evergreen leaves; flowers in terminal clusters, white or pinkish; sepals 4–5; corolla bell-shaped or jug-shaped, only the tips of the 4–5 petals free; stamens 8–10; anthers awned on the back, opening by terminal pores; ovary superior, 4–5-celled; style slender; stigma terminal; fruit a drupe with 4–10 cohering stones. Pl. 7, fig. B. Our only species the trailing, *A. Úva-úrsi.*

CHIÓGENES — SNOWBERRY

(Gr. *chion,* snow, *genes,* born)

A slender, dwarf, trailing, semi-shrubby plant with very small, ovate, alternate, evergreen leaves with the flavor of wintergreen; flowers solitary, axillary; sepals 4; corolla bell-shaped, the tips of the 4 petals free; stamens 8, opening by short slits; ovary half-inferior, 4-celled; style short; fruit a white berry with numerous small seeds. The only species, *C. hispídula.*

VACCÍNIUM — HUCKLEBERRY, BLUEBERRY, CRANBERRY

(L. *vaccinium,* blueberry)

Shrubs (some almost herbaceous) with alternate, evergreen or deciduous leaves; flowers solitary in the axils or in terminal or axillary clusters; sepals 4 or 5, united at the base; corolla of 4–5

united petals, variously shaped; stamens 8–10, awnless, but the pollen sacs prolonged into tubes with terminal pores; ovary inferior, 4–5-celled; fruit a red, blue, or black berry with many small seeds. Pl. 7, fig. C.

1. Creeping bog plants; petals nearly or quite separate [Oxycóccus]
   a. Leaves oval or oblong, obtuse — *V. macrocárpon*
   b. Leaves ovate, acute — *V. Oxycóccos*
2. Erect small shrubs; petals clearly united
   a. Flowers mostly 4-parted; stamens 8 — *V. uliginósum*
   b. Flowers 5-parted; stamens 10
      (1) Leaves entire, pubescent beneath — *V. canadénse*
      (2) Leaves serrulate, glabrous beneath — *V. pennsylvánicum*

GAYLUSSÁCIA — HUCKLEBERRY

(Named for Gay-Lussac, a chemist)

Upright shrubs with alternate, mostly resinous leaves; flowers in racemes; sepals 5, united at the base; corolla urn-shaped, the tips of the 5 petals free; stamens 10; anthers awnless, but the pollen sacs prolonged into tubes with terminal pores; ovary inferior, 10-celled; fruit a berry-like drupe with 10 stones. Our only species, the deciduous shrub, *G. baccáta.*

Primulales Primrose Order

Primuláceae — Primrose Family

Herbs with simple leaves; sepals usually 5; petals 5, rarely wanting; stamens 5, opposite the corolla lobes; ovary 1-celled; flower syncarpous, sympetalous, hypogynous, regular.

1. Stem leafless
   a. Flowers erect, salverform — *Primula*
   b. Flowers inverted; corolla reflexed — *Dodecatheon*
2. Stem leafy
   a. Flowers yellow, in an oblong spike — *Lysimachia*
   b. Flowers white
      (1) Leaves whorled at the top; corolla conspicuous — *Trientalis*
      (2) Leaves whorled at the joints; corolla inconspicuous — *Androsace*

PRÍMULA — PRIMROSE

(L. diminutive of *primus,* first)

Perennial herbs with basal leaves and umbellate flowers at the summit of a scape; calyx tubular or campanulate, 5-lobed; corolla funnelform or salverform, the petals notched at the ends; stamens 5, opposite the petals; ovary 1-celled, globose or ovoid; placenta free, central; capsule many-seeded, splitting at the top. Pl. 7, fig. D.

1. Flowers rose to lilac
   a. Leaves usually mealy beneath — *P. intercédens*
   b. Leaves green on both sides — *P. mistassínica*
2. Flowers yellow — **P. acaúlis*

DODECÁTHEON — SHOOTING STAR

(Gr. *dodekatheon,* twelve gods, a classical name for the primrose)

Glabrous perennial herbs with basal leaves; flowers umbellate, pink or white, showy, on a naked scape; calyx deeply 5-lobed; corolla 5-parted, the tube short, the lobes strongly reflexed; stamens 5; filaments short and united at the base; anthers long, connivent into a cone; ovary 1-celled; capsule oblong or cylindric, dehiscent mostly at the apex. Pl. 7, fig. E. Only a single native species, *D. Meádia.*

LYSIMÁCHIA — LOOSESTRIFE

(Gr. *lysis,* a release, *mache,* strife)

[Naumbergia]

Mostly perennial herbs with entire, opposite or whorled (rarely alternate) leaves; flowers yellow, mostly axillary, either solitary or in spike-like racemes or panicles; calyx 5–7-parted, corolla 5–7-

parted, the tube often very short; stamens 5–7, opposite the petals; ovary globose or ovoid, 1-celled; capsule 5–7-valved.

Swamp plant with dense clusters of small yellow flowers — *L. thyrsiflóra*

TRIENTÁLIS — STARFLOWER
(L. *trientalis,* a third of a foot)

Low perennial herbs with a slender stem bearing a whorl of leaves at the summit; flowers few or solitary, white; sepals mostly 7, narrow; corolla saucer-shaped, mostly 7-parted, its tube almost obsolete; stamens as many as the petals, filaments united into a ring at the base; ovary globose, 1-celled; capsule 5-valved. Pl. 7, fig. F. Only one species in our flora, *T. americána.*

ANDRÓSACE — ANDROSACE
(Gr. *androsakes,* a kind of plant)

Low, annual or perennial, scapose herbs with tufted basal leaves; flowers umbellate or solitary; calyx 5-cleft; corolla funnelform or salverform, 5-lobed, its tube shorter than the calyx; stamens 5; filaments very short; ovary top-shaped or nearly globose; capsule 5-valved. Pl. 6, fig. G. A single species in our flora, *A. occidentális.*

Gentianales Gentian Order

Gentianáceae — Gentian Family

Smooth bitter herbs with simple or trifoliolate leaves; sepals 5; petals 5; stamens 5, alternate with the petals; ovary 1-celled with parietal placentae; flowers syncarpous, sympetalous, hypogynous, regular.

MENYÁNTHES — BUCKBEAN
(Gr. *menanthes,* moon flower)

Perennial, glabrous herb with thick, creeping rhizome and long-petioled, trifoliolate leaves; flowers in a raceme or panicle on a naked scape, white; calyx 5-parted; corolla short funnel-shaped, 5-cleft, white-bearded within; stamens 5; ovary 1-celled; stigma 2-lobed; capsule ovoid; seeds smooth and shining. A single species, *M. trifoliáta.*

Oleáceae — Olive Family

Trees or shrubs with simple or pinnate leaves; sepals 4; petals 2–4 or 0; stamens 2; ovary 2-celled; flowers perfect to dioecious, syncarpous, sympetalous or apetalous, hypogynous, regular.

1. Petals none; trees — *Fraxinus*
2. Petals present; shrubs
   a. Flowers yellow — *Forsythia*
   b. Flowers not yellow
      (1) Flowers lilac, rarely white; petals small, united — *Syringa*
      (2) Flowers white; petals 2–3 cm. long, nearly free — *Chionanthus*

FRÁXINUS — ASH
(L. *fraxinus,* ash tree)

Trees with opposite, odd-pinnate leaves; flowers small, in clusters, mostly dioecious; calyx small, 4-cleft, or sometimes lacking; petals 4 or lacking in our species; stamens 2, rarely 3 or 4; ovary 2-celled; stigma 2-cleft; fruit an elongated 1-seeded samara.

1. Lateral leaflets sessile — *F. nígra*
2. Lateral leaflets stalked
   a. Wing mostly at the end of fruit — *F. americána*
   b. Wing extending down the sides of fruit
      (1) Leaves and twigs velvety — *F. pennsylvánica*
      (2) Leaves and twigs smooth — *F. lanceoláta*

FORSÝTHIA — FORSYTHIA
(Named for Forsyth, an English horticulturist)

Shrubs with opposite, serrate, simple or trifoliolate leaves; flowers yellow, appearing before the leaves from scaly winter buds, solitary or 2–5; calyx 4-parted; corolla campanulate, deeply

4-parted; stamens 2, borne at the base of the corolla; ovary 2-celled; stigma 2-lobed; fruit a woody capsule. Pl. 6, fig. H.

1. Corolla golden yellow; leaves ovate — **F. suspénsa*
2. Corolla greenish yellow; leaves lanceolate — **F. viridíssima*

SYRÍNGA — LILAC

(Gr. *syrinx,* tube)

Upright shrubs with opposite, simple or rarely pinnate leaves; flowers in panicles, from terminal or lateral buds; calyx campanulate, 4-toothed; corolla funnelform or salverform, with a 4-lobed spreading limb; stamens 2, on the tube of the corolla; ovary 2-celled; stigma 2-lobed; fruit a leathery capsule with 4 seeds.

1. Corolla much longer than calyx
   a. Flower clusters from winter buds, usually without leaves
      (1) Leaves cordate or truncate at base — **S. vulgáris*
      (2) Leaves narrowed towards the base
         (a) Leaves rounded or broadly wedge-shaped at base; flower clusters very large — **S. chinénsis*
         (b) Leaves acutely narrowed at base; flower clusters small — **S. pérsica*
   b. Flower clusters on terminal leafy branches — **S. villósa*
2. Corolla a little longer than calyx — **S. amurénsis*

CHIONÁNTHUS — FRINGE TREE

(Gr. *chion,* snow, *anthos,* flower, from the color)

Shrub or small tree with simple, entire, opposite leaves; flowers in cymose panicles, perfect or polygamous; calyx small, 4-lobed; corolla of 4 linear petals united only at the base; stamens 2; ovary 2-celled; stigma notched; fruit a small, 1-seeded drupe. An infrequently cultivated species, **C. virgínica.*

Plate 8: A, Phlox divaricata, 1, flower, 2, fruit; B, Hydrophyllum virginicum; C, Ellisia Nyctelea, 1, flower, 2, fruit; D, Atropa Belladonna; E, Hyoscyamus niger; F, Lithospermum canescens, 1, flower, 2, fruit; G, Mertensia paniculata; H, Myosotis palustris.

Polemoniales Phlox Order

Polemoniáceae — Phlox Family

Herbs with entire to dissected leaves; sepals 5; petals 5; stamens 5, alternate with the corolla lobes; ovary usually 3-celled; flower syncarpous, sympetalous, hypogynous, regular.

1. Leaves simple
   a. Leaves opposite; flowers large — *Phlox*
   b. Leaves alternate; flowers minute — *Collomia*
2. Leaves pinnate — *Polemonium*

PHLÓX — PHLOX, SWEET WILLIAM

(Gr. *phlox,* a flame)

Perennial or annual, erect herbs with opposite, entire leaves; flowers cymose, in terminal or axillary clusters; calyx tubular-campanulate, 5-cleft; corolla salverform, with a narrow tube; stamens 5, inserted unequally on the corolla tube; ovary 3-celled; capsule 3-valved, usually 3-seeded. Pl. 8, fig. A.

1. Plants forming mats; leaves subulate — **P. subuláta*
2. Plants erect-growing, not in mats; leaves wider
   a. Leaves linear-lanceolate; flowers pink — *P. pilósa*
   b. Leaves oblong to ovate-lanceolate; flowers blue or bluish — *P. divaricáta*

COLLÓMIA — COLLOMIA

(Gr. *kolloma,* glue)

Annual or perennial herbs with alternate, mostly entire leaves; flowers mostly in capitate, leafy-bracted clusters, light purple to nearly white; calyx 5-cleft; corolla tubular-funnelform; stamens inserted unequally on the corolla tube; ovary 3-celled; capsule ovoid, 3-seeded. Only one species in our flora, *C. lineáris.*

POLEMÓNIUM — POLEMONIUM

(Gr. *polemonion,* name of plant)

Perennial herbs with alternate, pinnate leaves and blue or white, cymose-paniculate flowers; calyx campanulate, 5-lobed to about the middle; corolla campanulate or short funnelform; stamens 5, inserted about equally on the corolla tube; ovary 3-celled, ovules several in each cell; capsule ovoid, 3-valved, 3-seeded. Only one species in our flora, *P. réptans.*

Hydrophylláceae — Waterleaf Family

Herbs, usually hairy; sepals 5; petals 5; stamens 5, alternate with the petals; ovary 1–2-celled; flower syncarpous, sympetalous, hypogynous, regular.

1. Stamens exserted — *Hydrophyllum*
2. Stamens included, calyx very large — *Ellisia*

HYDROPHÝLLUM — WATERLEAF

(Gr. *hydro-,* water, *phyllon,* leaf)

Perennial, mostly pubescent herbs with alternate, lobed, pinnatifid or pinnately divided leaves; flowers in scorpioid cymes, white, blue or purple; calyx deeply 5-parted; corolla campanulate, 5-lobed, with an appendage forming a groove opposite each lobe; stamens 5, exserted, filaments hairy; ovary pubescent, 1-celled, ovules 4, placentae fleshy, nearly filling the cavity and soon free from the wall except at the top and bottom; capsule 2-valved, 1–4 seeded. Pl. 8, fig. B.

1. Small appendages between the sepals — *H. appendiculátum*
2. Small appendages lacking — *H. virgínicum*

ELLÍSIA

(Named for John Ellis, a naturalist)

[Macrocalyx]

Annual, pubescent herbs with opposite or alternate, pinnately-lobed or divided leaves; flowers solitary or racemose, white or bluish; calyx 5-lobed, becoming much enlarged in fruit; corolla campanulate, 5-lobed, about as long as the calyx, with 5 small appendages within; ovary 1-celled, ovules 4; capsule globose, drooping. Pl. 8, fig. C. A single species in our flora, *E. Nyctélea.*

Solanáceae — Potato Family

Herbs or shrubs with alternate, usually strong-scented leaves; sepals 5, united; petals 5, united; ovary usually 2-celled, sometimes 3–5-celled; stigma 1, sometimes 2-lobed; fruit a berry or capsule; flower syncarpous, sympetalous, hypogynous, regular or sometimes irregular.

1. Flowers in a terminal leafless cyme — *Physochlaena*
2. Flowers axillary, or the lower axillary and the upper in a terminal leafy raceme or spike
   a. Leaves narrowed into distinct petioles; flowers all axillary
      (1) Corolla yellowish with 5 brownish spots inside; calyx inflated, enclosing the ripening berry — *Physalis*
      (2) Corolla purplish without large brown spots; calyx not inflated — *Atropa*
   b. Leaves sessile or clasping, lower flowers axillary, the upper forming a raceme or spike — *Hyoscyamus*

PHYSOCHLAÉNA

(Gr. *physos,* bladder, *chlaena,* cloak)

Erect, glabrous or pubescent herbs with mostly entire leaves and violet or greenish-yellow flowers in a terminal inflorescence; calyx tubular-campanulate, enlarged in fruit; corolla funnelform; stamens inserted at the middle of the tube; capsule opening by a lid. A single cultivated species, **P. orientális.*

PHÝSALIS — CHINESE LANTERN, GROUND CHERRY

(Gr. *Physalis,* bladder, from the inflated calyx)

Annual or perennial, generally pubescent herbs of straggling or diffuse growth; leaves alternate, mostly angled; flowers on axillary or extra-axillary pedicels, yellowish or whitish, sometimes blue; calyx 5-toothed or cleft, becoming bag-like in fruit; corolla short campanulate, usually with brownish spots inside; fruit a berry, enclosed in the inflated calyx.

Cultivated perennial with red, lantern-like fruit — **P. Alkekéngi*

ÁTROPA — BELLADONNA

(Named for Atropos, one of the Fates)

Erect, glabrous herbs with alternate, entire leaves and axillary flowers; calyx campanulate with 5 leafy, ovate divisions; corolla tubular-campanulate with a short 5-lobed limb; filaments bent, inserted near the base of the tube; fruit a poisonous berry. Pl. 8, fig. D. A rarely cultivated species, **A. Belladónna.*

HYOSCÝAMUS — HENBANE

(Gr. *hyos,* hog, *kyamos,* bean)

Coarse, mostly pubescent, annual or perennial herbs with alternate, coarsely-toothed or pinnatifid leaves; flowers axillary, the upper forming a leafy raceme or spike; calyx 5-toothed, enlarged in fruit; corolla funnelform, 5-lobed, sometimes split on one side; fruit a berry-like capsule, mostly opening by a lid. Pl. 8, fig. E. A rarely cultivated species, **H. níger.*

Boragináceae — Borage Family

Herbs with mostly entire and hairy leaves; sepals 5; petals 5; stamens 5, alternate with the petals; fruit usually of 4 nutlets; flower syncarpous, sympetalous, hypogynous, mostly regular.

1. Nutlets armed with barbed prickles
   - a. Flowers blue or white — *Lappula*
   - b. Flowers red-purple — *Cynoglossum*
2. Nutlets not armed
   - a. Corolla tubular, lobes erect — *Onosmodium*
   - b. Corolla funnelform, lobes spreading
     - (1) Flowers yellow or white — *Lithospermum*
     - (2) Flowers blue-purple — *Mertensia*
   - c. Corolla salverform — *Myosotis*

LÁPPULA — STICKSEED

(L. *lappula,* a little bur)

Annual or perennial, rough-pubescent herbs with alternate, entire leaves and small blue or white flowers in terminal raceme- or spike-like cymes; calyx deeply 5-cleft; corolla short salverform or funnelform; ovary 4-lobed, in fruit forming 4 nutlets, armed on the back or margins with barbed prickles.

Annual with blue flowers in a bracted cyme — *L. echináta*

CYNOGLÓSSUM — HOUND'S TONGUE

(Gr. *kynos,* dog, *glossa,* tongue)

Mostly rough-pubescent, tall herbs with alternate, entire leaves, the basal ones long-petioled; flowers in scorpioid cymes, blue to reddish-purple; corolla short funnelform with 5 scales alternating with the stamens; ovary deeply 4-lobed, in fruit forming 4 divergent nutlets, armed on the back with short, barbed prickles.

1. Plant downy; stem leaves sessile — *C. officinále*
2. Plant hispid; upper stem leaves clasping — *C. boreále*

ONOSMÓDIUM — GROMWELL

(Gr. *onosma,* a borage)

Perennial hispid herbs with alternate, entire, strongly veined leaves and yellowish flowers in scorpioid, bracted cymes; sepals linear; corolla tubular or tubular-funnelform; anthers elongated; style filiform, much exserted; ovary 4-parted; nutlets ovoid, bony, white and shining.

Stem bristly; leaves entire, rough; flowers yellowish-white — *O. occidentális*

LITHOSPÉRMUM — PUCCOON

(Gr. *lithos,* stone, *sperma,* seed)

Annual or perennial, pubescent herbs with alternate, entire leaves and white, yellow, or orange flowers in leafy-bracted, spike-like cymes; corolla funnelform or salverform, with or without appendages in the throat; stamens nearly sessile; anthers oblong; ovary 4-lobed; style slender, nutlets smooth or roughened, bony or stony. Pl. 8, fig. F.

1. Flowers bright yellow or orange
   - a. Corolla lobes entire
     - (1) Rough-hairy; corolla tube bearded at base within — *L. Gmélini*
     - (2) Smooth-hairy; corolla tube not bearded — *L. canéscens*
   - b. Corolla lobes toothed or fringed — *L. angustifólium*
2. Flowers white or yellowish
   - a. Flowers white; leaves lanceolate — *L. arvénse*
   - b. Flowers yellowish; leaves ovate — *L. latifólium*

MERTÉNSIA — LUNGWORT

(Named for Mertens, a German botanist)

Perennial, glabrous or pubescent herbs with alternate, entire leaves and rather large, purplish-blue (rarely white) flowers in panicled or raceme-like cymes; corolla tubular-funnelform, naked or with appendages in the throat; anthers oblong or arrow-shaped; style filiform, long; ovary 4-lobed; nutlets wrinkled when mature. Pl. 8, fig. G.

1. Plant smooth; flowers trumpet-shaped — *M. virgínica*
2. Plant rough; flowers bell-shaped — *M. paniculáta*

MYOSÓTIS — FORGET-ME-NOT

(Gr. *mys,* mouse, *otis,* ear, from the hairy leaves)

Mostly low, branching, soft-pubescent herbs with alternate leaves and small blue, pink, or white flowers in naked, raceme-like cymes (sometimes leafy at the base); corolla salverform, with short appendages in the throat; stamens included, filaments short; ovary deeply 4-lobed; nutlets erect, smooth or pilose. Pl. 8, fig. H.

1. Flowers 2–3 mm. wide — *M. arvénsis*
2. Flowers 6–8 mm. wide — **M. scorpioídes*

Scrophulariáceae — Snapdragon Family

Mostly herbs with simple leaves; sepals 5; petals 5; stamens 2–5; ovary 2-celled; flower syncarpous, sympetalous, hypogynous, mostly irregular, i.e., 2-lipped.

I. Leaves deeply cut; flower hooded — *Pedicularis*

II. Leaves entire or toothed
   1. Corolla 2–4-lobed
      - a. Corolla usually 2-lobed; flowers in a dense spike — *Synthyris*
      - b. Corolla 4-lobed; flowers in racemes — *Veronica*
   2. Corolla, 2-lipped
      - a. Flowers with large lobed bracts — *Castilleia*
      - b. Flowers without large lobed bracts
        - (1) Corolla inflated, flower small, yellowish-brown — *Scrophularia*
        - (2) Corolla tubular, flower white, purple, or yellow, conspicuous
          - (a) Fifth stamen present as a sterile filament — *Pentstemon*
          - (b) Fifth stamen entirely lacking
            - x. Corolla closed, spurred — *Linaria*
            - y. Corolla open, not spurred — *Digitalis*

PEDICULÁRIS — LOUSEWORT
(L. *pedicularis*, lousewort)

Mostly perennial herbs with opposite or alternate, pinnately lobed or pinnatifid leaves and yellow to reddish flowers in terminal spikes; calyx tubular, cleft on the lower side, 2–5-toothed; corolla strongly 2-lipped, the upper lip flattened, often beaked, the lower 3-lobed, spreading or reflexed; stamens 4; anthers in pairs, their sacs transverse; capsule compressed, oblique, beaked. Pl. 9, fig. A.

Leaves pinnately parted; flowers yellow — *P. canadénsis*

SÝNTHYRIS — SYNTHYRIS
(Gr. *synthyris*, doors together)

Perennial herbs with large, rounded, crenulate basal leaves and small, sessile stem leaves; flowers in a dense terminal spike, yellowish or pinkish; calyx 4-parted; corolla short campanulate, 2–4-lobed; stamens 2, exserted; ovary 2-celled; capsule compressed, notched at the apex. Only one species in our flora, *S. Búllii*.

PLATE 9: A, Pedicularis canadensis; B, Veronica peregrina, 1, flower, 2, fruit; C, Castilleia coccinea; D, Pentstemon gracilis; E, Linaria vulgaris, 1, flower, 2, fruit; F, Scutellaria parvula, 1, flower, 2, fruit; G, Mentha piperita; H, Lamium album, 1, flower, 2, fruit.

VERÓNICA — SPEEDWELL
(Named for Saint Veronica)

Chiefly annual or perennial herbs with opposite or alternate leaves and small blue, pink, or white flowers, axillary or in terminal racemes or spikes; corolla mostly 4-lobed, with a short tube and spreading border; stamens 2, divergent on each side of the upper lobe; ovary 2-celled; capsule flattened, lobed or notched at the apex. Pl. 9, fig. B.

1. Flowers solitary, white — *V. peregrína*
2. Flowers in racemes, blue or bluish — *V. americána*

CASTILLÉIA — PAINTED CUP
(Named for Castillejo, a Spanish botanist)

Herbs with alternate leaves and red, yellow, or whitish flowers in dense, leafy-bracted spikes, the bracts often brightly colored and larger than the flowers; calyx tubular, cleft at the summit; corolla irregular, 2-lipped, the upper lip elongated, arched, the lower short, 3-lobed; stamens 4, the anther sacs unequal; style filiform; capsule ovoid or oblong, many-seeded. Pl. 9, fig. C.

1. Bracts greenish — *C. sessiliflóra*
2. Bracts red or yellow — *C. coccínea*

SCROPHULÁRIA — FIGWORT
(L. *scrofularia*, a remedy for scrofula)

Strong-scented perennial herbs with mostly opposite leaves; flowers in panicled cymes, yellowish or brownish; calyx deeply 5-cleft; corolla irregular, 5-lobed, the two upper lobes erect, the lateral ascending, the lower one spreading or reflexed; fertile stamens 4, in pairs, with confluent anther sacs, the fifth stamen sterile; capsule ovoid, many-seeded.

Coarse herb with square stem and toothed leaves — *S. leporélla*

PENTSTÉMON — BEARD-TONGUE

(Gr. *pente,* five, *stemon,* stamen)

Perennial herbs with opposite, entire or toothed leaves and showy flowers in terminal racemes or narrow panicles; calyx 5-parted; corolla irregular, tubular, more or less dilated above and 2-lipped; fertile stamens 4, the fifth sterile filament smooth or hairy; capsule many-seeded. Pl. 9, fig. D.

1. Flowers white — *P. álbidus*
2. Flowers purple to blue
   - a. Corolla throat nearly filled with hairs — *P. hirsútus*
   - b. Corolla throat open
     - (1) Corolla about 2 cm. long — *P. grácilis*
     - (2) Corolla 5 cm. long — *P. grandiflórus*

LINÁRIA — BUTTER-AND-EGGS

(L. *linum,* flax, from the resemblance)

Biennial or perennial herbs with mostly alternate, entire leaves and yellow, blue, or white flowers in terminal spikes or recemes; calyx 5-parted; corolla irregular, spurred at the base, 2-lipped, the lower lip 3-lobed and prominent; stamens 4, included; capsule ovoid, opening by one or more pores near the apex. Pl. 9, fig. E.

Plant erect; leaves lance-linear; flowers yellow — *L. vulgáris*

DIGITÁLIS — FOXGLOVE

(L. *digitalis,* finger-like, from the corolla)

Tall, biennial or perennial herbs with alternate, entire or crenate leaves and showy flowers in a long, terminal, mostly 1-sided raceme; corolla slightly irregular with a somewhat inflated tube; stamens in pairs, filaments bent; style slender, stigma 2-lobed; capsule ovoid. A cultivated species seldom blooming in our climate, **D. purpúrea.*

Orobancháceae — Broom Rape Family

Leafless parasitic herbs; sepals 5; petals 5; stamens 4, of two lengths; ovary 1-celled; flower syncarpous, sympetalous, hypogynous, irregular.

THALÉSIA — BROOM RAPE

(Named for the Greek philosopher, Thales)

Glandular-pubescent, brownish or yellowish, parasitic herbs with scattered scales and long-peduncled flowers; calyx campanulate; corolla oblique, tubular, slightly 2-lipped; stamens included, anther sacs mucronate at the base; stigma 2-lipped. A single native species, *T. uniflóra.*

Plantaginales Plantain Order

Plantagináceae — Plantain Family

Stemless herbs with ribbed simple leaves; sepals 4; petals 4, scarious; stamens 4; ovary 1–2-celled (rarely 4-celled); flower syncarpous, sympetalous, hypogynous, regular.

PLANTÁGO — PLANTAIN

(L. *planta,* sole, *-ago,* like, from the form of the leaf)

Chiefly stemless herbs with ribbed leaves and small whitish flowers in dense spikes on naked scapes; sepals 4; corolla salverform, 4-parted, withering on the fruit; stamens 4, rarely 2, on weak, exserted filaments; ovary 2-celled; fruit a membranous capsule, opening by a lid, 2–several seeded.

1. Leaves narrowly oblong or lanceolate, strongly ribbed — *P. lanceoláta*
2. Leaves linear to filiform
   - a. Leaves white, silky-hairy; bracts not longer than calyx — *P. Púrshii*
   - b. Leaves green, not silky; lower bracts much longer than calyx — *P. aristáta*

Lamiales Mint Order

Labiátae — Mint Family

[Lamiaceae]

Aromatic herbs, usually with opposite leaves and 4-angled stems; sepals 5; petals 5; corolla 2-lipped; stamens 2 or 4; ovary 4-lobed; flower syncarpous, sympetalous, hypogynous, mostly irregular; fruit a group of 4 nutlets.

1. Leaves round; trailing herbs — *Glechoma*
2. Leaves linear to ovate
   - a. Leaves linear, fragrant; flowers small, pinkish — *Hedeoma*
   - b. Leaves lance-ovate; flowers blue — *Scutellaria*
   - c. Leaves ovate; flowers large, white — *Lamium*

GLECHÓMA — GROUND IVY

(Gr. *glechon,* pennyroyal)

Low creeping herbs with long-petioled, nearly orbicular leaves and blue or violet flowers in small axillary clusters; calyx tubular; corolla tube enlarged upward, upper lip erect, the lower spreading; stamens 4, not exserted, ascending under the upper lip; nutlets ovoid, smooth. A single species in our flora, *G. hederácea.*

HEDEÓMA — PENNYROYAL

(Gr. *hedyosmos,* fragrant)

Low aromatic annuals with small leaves and loose, axillary clusters of flowers; calyx tubular, 13-nerved, gibbous on the lower side, bearded in the throat; upper lip of corolla flat, notched, the lower lip spreading, 3-lobed; perfect stamens 2, ascending under the upper lip; nutlets ovoid, smooth.

Leaves linear, entire, hispid; flowers clustered, bluish — *H. híspida*

SCUTELLÁRIA — SKULLCAP

(L. *scutella,* a salver)

Bitter perennial herbs, not aromatic; flowers blue or violet, in terminal or axillary racemes, or solitary, or 2–3 in the axils; calyx campanulate in flower, becoming more or less 2-lipped, the upper lip with a crest or protuberance; corolla 2-lipped, the upper arched, lower lip spreading or deflexed; stamens 4, under the upper lip; nutlets roughened. Pl. 9, fig. F.

Leaves ovate to lanceolate; flowers solitary, blue — *S. párvula*

LÁMIUM — DEAD NETTLE

(Gr. *lamia,* throat, from the gaping corolla)

Annual or perennial, diffuse herbs with crenate, dentate, or incised, mostly cordate, leaves; flowers in axillary or terminal clusters; calyx tubular-campanulate, 5-toothed, 5-nerved; upper lip of corolla arched, entire, narrowed at the base, lower lip 3-cleft, the middle lobe contracted at the base; stamens 4, ascending under the upper lip; nutlets smooth or tuberculate. Pl. 9, fig. H.

Flowers white; leaves ovate, petioled — *L. álbum*

Rosales Rose Order

Rosáceae — Rose Family

Herbs, shrubs, or trees with alternate simple or compound leaves; sepals 5, often with 5 bracteoles alternating with them; petals 5, or rarely 0; stamens 5–many; pistils 1–many, simple and free or with the ovaries united into a 2–10-celled compound ovary; flower apocarpous or syncarpous, apopetalous, hypogynous, perigynous or epigynous, regular.

I. Carpel 1; trees or shrubs with perigynous flowers — *Prunus*

II. Carpels several to many
   1. Carpels free, i.e., several simple pistils; flowers perigynous
      - a. Hypanthium flat or open bell-shaped; pistils borne on a convex or conical receptacle
        - (1) Calyx with bractlets between the sepals; mostly herbs
          - (a) Hypanthium nearly flat; styles small

x. Flowers mostly yellow; fruit a dry cluster of achenes — *Potentilla*
y. Flowers white; receptacle fleshy in fruit — *Fragaria*
(b) Hypanthium bell-shaped; styles long, conspicuous in fruit — *Geum*
(2) Calyx without bractlets; mostly shrubs — *Rubus*
b. Hypanthium cup-shaped, obconical, or jug-shaped; the ovaries not on a projecting receptacle
(1) Pistils 2–6; hypanthium cup-shaped or obconic, with the ovaries at the bottom of the cup
(a) Hypanthium cup-shaped; shrubs with simple leaves — *Spiraea*
(b) Hypanthium obconic; herb with trifoliolate leaves — *Waldsteinia*
(2) Pistils numerous; hypanthium jug-shaped, concealing the ovaries in its hollow interior; shrubs — *Rosa*
2. Carpels more or less united into a compound pistil; flowers epigynous
a. Leaves pinnately compound (rarely only at the base) — *Sorbus*
b. Leaves simple, often somewhat lobed
(1) Flowers large, in simple umbel-like cymes or few-flowered clusters
(a) Flowers scarlet, nearly sessile — *Chaenomeles*
(b) Flowers rose-colored to white, pediceled — *Malus*
(2) Flowers smaller, numerous, in racemes or compound cymes
(a) Flowers in simple racemes, ovary becoming 10-celled — *Amelanchier*
(b) Flowers in compound cymes; ovary 2–5-celled
x. Styles separate to the base; shrubs or trees, mostly armed
(x) Tall thorny shrubs or trees; ovule 1 in each cell of the ovary or 2 unlike — *Crataegus*
(y) Low shrub; 2 similar ovules in each cell of the ovary — *Cotoneaster*
y. Styles united at the base; low, unarmed shrubs — *Aronia*

PRÚNUS — PLUM, CHERRY

(Classical Latin name for the plum tree)

Deciduous trees or shrubs; flowers white or rarely pink, clustered, perigynous with a cup-shaped hypanthium; sepals 5; petals 5; stamens 15–30; all borne on the margin of the hypanthium; carpel 1, borne in the center of the cup; fruit a drupe with a nearly smooth stone. Pl. 10, fig. F.

1. Flowers single, i.e., petals 5
a. Trees or large shrubs; leaves broad or, if narrow, serrate almost to the base
(1) Flowers in racemes terminating short leafy shoots (Choke Cherries)
(a) Small trees or large shrubs; leaves elliptic, oval, or obovate; bark smooth
m. Racemes loose-flowered, pendulous or spreading; hypanthium hairy within — **P. Pádus*
n. Racemes dense-flowered, ascending or horizontal; hypanthium nearly smooth within — *P. virginiána*
(b) Medium-sized to large tree; leaves narrowly elliptic to oblong-lanceolate; bark rough — *P. serótina*
(2) Flowers in umbel-like clusters from winter buds, appearing with or before the leaves
(a) Branches thorny; fruit mostly solitary (Plums)
m. Teeth of leaves gland-tipped; sepals glandular — *P. nígra*
n. Teeth of leaves acute, bristle-tipped; sepals not glandular — *P. americána*
(b) Branches not thorny; fruit in clusters (Cherries)
m. Flowers in corymbs; petals 4–6 mm. long; native tree — *P. pennsylvánica*
n. Flowers in umbels; petals 8–12 mm. long; cultivated — **P. Cérasus*
b. Dwarf shrubs 3–15 dm. high; leaves narrow, not serrate at the cuneate base (Sand Cherries)
(1) Leaves narrowly oblanceolate-spatulate, acute; flowering branches wand-like — *P. púmila*
(2) Leaves oblong-spatulate to oval or somewhat obovate
(a) Petioles 5–10 mm. long; leaves mostly obtuse; branches erect or ascending — *P. susquehánae*

(b) Petioles 5–6 mm. long; leaves mostly acute; branches irregularly spreading *P. Bésseyi*

2. Flowers double, i.e., with numerous petals (Flowering Plums and Flowering Almonds)
   a. Leaves obovate, abruptly acuminate, sharply serrate
      (1) Leaves densely tomentose beneath **P. tomentósa*
      (2) Leaves sparingly pubescent on both sides **P. tríloba*
   b. Leaves oblong-lanceolate, blunt or acutish at the apex, crenate-serrate, the crenations glandular-serrulate **P. glandulósa*

POTENTÍLLA — CINQFOIL

(L. *potens,* powerful)

Perennial herbs or rarely low shrubs with compound leaves; flowers slightly perigynous with a flat hypanthium; sepals 5, usually with 5 narrow intermediate bractlets; petals 5; stamens many; carpels many on the raised central part of the receptacle; styles deciduous; fruit a cluster of unappendaged achenes. Pl. 10, fig. A.

1. Leaves pinnate, smooth above, quite hairy below *P. Anserína*
2. Leaves palmately 5-foliolate *P. canadénsis*

PLATE 10: A, Potentilla canadensis; B, Rubus parviflorus, 1, flower, 2, fruit; C, Spiraea VanHouttei, 1, flower, 2, fruit; D, Geum triflorum, 1, flower, 2, fruit; E, Amelanchier laevis, 1, flower, 2, fruit; F, Prunus pennsylvanica, 1, flowers, 2, fruit.

FRAGÁRIA — STRAWBERRY

(L. *fragum,* strawberry plant)

Low perennial herbs with compound basal leaves with 3 leaflets; flowers slightly perigynous with a flat hypanthium, often more or less dioecious; sepals 5, with 5–7 intermediate narrow bractlets; petals 5; stamens many; carpels many, borne on the projecting central part of the receptacle; styles short, basal, persistent; fruit a greatly enlarged, edible, fleshy receptacle, carrying the achenes on its surface.

1. Leaves thick, dark green; berry round; nutlets sunken in pits *F. virginiána*
2. Leaves thin, light green; berry long; nutlets projecting *F. americána*

GÉUM — AVENS

(L. *geum,* avens)

Perennial herbs with pinnately compound or deeply lobed leaves; flowers perigynous, usually with a bell-shaped hypanthium; sepals 5, usually with 5 narrow intermediate bractlets; petals 5; stamens many; carpels many, on the raised central part of the receptacle; styles long, persistent, usually jointed or plume-like; fruit a cluster of achenes appendaged with at least the basal half of the styles. Pl. 10, fig. D.

1. Leaflets 1–9; style jointed *G. rivále*
2. Leaflets many; style not jointed *G. triflórum*

RÚBUS — BLACKBERRY, RASPBERRY

(L. *rubus,* bramblebush)

Perennial, mostly prickly shrubs (rarely nearly or quite herbaceous), frequently with biennial canes; leaves lobed or more often compound; flowers perigynous, mostly white; sepals 5, without

bractlets; petals 5; stamens many; carpels few to many, free, borne on the convex central part of the receptacle; fruit an aggregate of small drupes, edible. A large genus of great taxonomic difficulty, particularly in the blackberry section.

1. All the leaves simple, palmately lobed — *R. parviflórus*
2. Some or all of the leaves compound
   a. Low unarmed plants, scarcely woody
      (1) Stems erect, 3–12 cm. high, without runners; petals pink — *R. árcticus*
      (2) Flowering stems ascending, 1–4 dm. high, runners long and trailing; petals white — *R. pubéscens*
   b. Plants with woody biennial canes, more or less armed with prickles or bristles
      (1) Ripe fruit falling off whole from the dry receptacle; leaves white-tomentose beneath (Raspberries)
         (a) Stems ascending, beset with straight, stiff bristles; fruit red
            x. Cultivated plant; flowers with a conspicuous disk; calyx and pedicels without glandular bristles — **R. idaéus*
            y. Native plant; the disk of the flowers concealed by the stamens; calyx and pedicel usually hispid with glandular hairs — *R. strigósus*
         (b) Stems recurving and rooting at the tip, armed with hooked prickles; fruit black — *R. occidentális*
      (2) Ripe fruit not separating from the fleshy receptacle, leaves green beneath (Blackberries)
         (a) Canes erect or somewhat arching, 1–2 m. high
            x. Peduncles and pedicels with numerous stalked glands — *R. nigrobáccus*
            y. Peduncles and pedicels without stalked glands
               (x) Leaflets of the leaves of the first year's canes long-acuminate; inflorescence leafy-bracted only at the base — *R. argútus*
               (y) Leaflets of the leaves of the first year's canes short acuminate; inflorescence leafy-bracted throughout — *R. frondósus*
         (b) Canes trailing or procumbent
            x. Stems armed with stiff, recurved prickles 1–3 mm. long; inflorescence few-flowered
               (x) Leaves somewhat sharply serrate, only slightly hairy beneath; flowers 2–5 — *R. flagelláris*
               (y) Leaves with coarse, broadly rounded, mucronate teeth, pubescent beneath; flowers 1–3 — *R. Baileyánus*
            y. Stems with numerous, bristle-like prickles; inflorescence many-flowered (5–12) — *R. setósus*

SPIRAÉA — SPIRAEA

(Gr. *spiraea,* perhaps originally from the twisted pods)

Perennial shrubs with simple leaves; flowers small, clustered, white, pink, or reddish, perigynous; sepals 5; petals 5; stamens numerous; carpels 5, free, inserted in the bottom of the cup-shaped receptacle; fruit a group of follicles.

1. Flowers borne on old wood in sessile, leafless umbels; leaves pinnately veined
   a. Leaves ovate or ovate-oblong, pubescent when young — **S. prunifólia*
   b. Leaves narrowly lanceolate to oblanceolate, glabrous
      (1) Leaves narrowly lanceolate; flowers 6–8 mm. in diameter — **S. Thunbérgii*
      (2) Leaves oblanceolate; flowers 8–11 mm. in diameter — **S. argúta*
2. Flowers in many-flowered corymbs terminating short leafy shoots; leaves palmately 3–5 veined — **S. Van-Houttei*

WALDSTEÍNIA — BARREN STRAWBERRY

(Named in honor of the Count of Waldstein-Wartenburg, a botanist)

Low herbs with basal, 3–5-parted or compound leaves; flowers perigynous with an obconical hypanthium; sepals 5, with 5 minute bractlets; petals 5; stamens many; carpels 2–6; styles jointed at the base, deciduous; fruit a small group of achenes. Our only species, *W. fragarioídes.*

ROSA — ROSE

(L. *rosa,* a rose)

More or less prickly perennial shrubs with pinnately compound leaves; flowers deeply perigynous; sepals 5; petals 5 (more in many cultivated forms); stamens many; carpels many, free, concealed in the hollow jug-shaped receptacle; fruit a hip — the fleshy hollow receptacle containing numerous achenes. Besides those given below, several other species of cultivated roses come into blossom about June 15.

1. Native species, flowers pink (rarely nearly white)
   a. A conspicuous pair of prickles beneath each node, other prickles present or absent
      (1) Leaflets mostly 5; stems greenish; prickles slender — *R. húmilis*
      (2) Leaflets 7–9; stems red-purple; prickles with a conspicuously enlarged base — *R. Macoúnii*
   b. No definite pairs of prickles beneath the nodes, prickles without conspicuously enlarged bases
      (1) Leaflets mostly 5, their serrations coarse and spreading; flowers mostly solitary; whole plant very prickly — *R. acicularis*
      (2) Leaflets 7–11, their serrations fine and ascending; flowers mostly in corymbs
         (a) Shrub about 1 m. high; twigs red-purple, often unarmed; corymbs few-flowered; leaflets mostly 7 — *R. blánda*
         (b) Plant mostly 3–4 dm. high; twigs greenish, mostly densely prickly; corymbs usually many-flowered; leaflets mostly 9–11 — *R. arkansána*
2. Cultivated species occasionally persisting in the vicinity of old gardens; flowers of various colors
   a. Foliage glandular, fragrant; flowers yellow — **R. foétida*
   b. Foliage glabrous, not scented
      x. Stems erect, densely bristly-prickly; flowers mostly white — **R. spinosíssima*
      y. Stems arching, with scattered prickles; flowers yellow — **R. Hugónis*

SÓRBUS — MOUNTAIN ASH

(L. *sorbus,* service tree)

Trees or large shrubs with pinnately compound (rarely only deeply lobed) leaves; flowers in large terminal corymbs, small, white, epigynous; sepals 5; petals 5; stamens 15–20; carpels 2–5, united; ovary inferior or half inferior; styles nearly separate; fruit a red, berry-like pome.

1. Leaves regularly pinnately compound
   a. Leaflets lanceolate, glabrous; flowers about 6 mm. in diameter — *S. americána*
   b. Leaflets oblong to oblong-lanceolate, more or less pubescent; flowers larger
      (1) Leaflets short-acuminate, sparsely pubescent beneath — *S. subvéstita*
      (2) Leaflets merely acute, persistently tomentose beneath — **S. aucupária*
2. Leaves irregularly lobed, sometimes with a few leaflets at the base — **S. semipinnáta*

CHAENOMÉLES — JAPANESE QUINCE

(Gr. *chaino,* to gape, *melea,* an apple)

Thorny shrubs; leaves simple with conspicuous stipules; flowers almost sessile, solitary or in small clusters, appearing before the leaves, epigynous; sepals 5, colored, deciduous in fruit; petals 5, scarlet (sometimes paler); stamens many; carpels 5; the ovaries united and inferior; styles united at the base; fruit a many-seeded pome. The only species cultivated in Minnesota is **C. Maúlei.*

MÁLUS — APPLE

(L. *malus,* apple tree)

Trees or large shrubs, often thorny; leaves simple, sometimes lobed, with small deciduous stipules; flowers in corymbs or umbel-like clusters, white or pink, showy, epigynous; sepals 5; petals 5 (more in some cultivated ornamental forms); stamens 15–20; carpels 2–5; ovaries inferior, united; fruit a pome with 2–5 2-seeded cartilaginous locules.

1. Lower surface of leaves and outer surface of sepals persistently tomentose
   a. Leaves closely crenate-serrate, abruptly short-acuminate; sepals reflexed — **M. púmila*
   b. Leaves obtuse or short-acute, irregularly toothed, notched, or lobed; sepals erect or spreading
      (1) Some of the leaves notched or lobed towards the base; sepals mostly erect — *M. ioénsis*
      (2) Leaves only coarsely toothed; sepals spreading — **M. Soulárdi*

2. Lower surface of leaves glabrous or glabrate; outer surface of sepals more or less pubescent but not tomentose
   a. Leaves with crenate-serrate or entire margins, rolled up in the bud
      (1) Leaf margin closely serrate or entire; sepals triangular ovate, obtuse; flowers rose-colored, double — **M. Halliána*
      (2) Leaf margin incurved or callous-serrate; sepals narrowly lanceolate; flowers white
         (x) Leaves thin; young twigs glabrous; sepals deciduous — **M. baccáta*
         (y) Leaves firm; young twigs pubescent; sepals persistent — **M. prunifólia*
   b. Leaves sharply serrate, folded lengthwise in the bud; flowers rose-colored — **M. floribúnda*

AMELÁNCHIER — JUNEBERRY, SERVICEBERRY

(The Savoy name)

Unarmed shrubs or small trees; leaves simple, with deciduous stipules, not lobed; flowers white, in racemes or solitary, epigynous; sepals 5, persistent; petals 5; stamens many; carpels 3–5; ovaries more or less united, inferior or half-inferior, each locule divided by a false partition; styles more or less united; fruit a small, dark-colored, berry-like pome, 6–10-celled, each cell 1-seeded.

1. Flowers racemose; leaves folded lengthwise in bud
   a. Leaves coarsely toothed; main lateral veins conspicuous, regularly spaced and nearly straight, without short intermediate veins
      (1) Some of the leaves sharply or bluntly angled at the apex
         (a) Tall straggling shrub not forming colonies; tomentum of leaves mostly shed before the flowers open — *A. sanguínea*
         (b) Low shrub forming dense colonies; lower surface of leaves densely tomentose at flowering time — *A. húmilis*
      (2) Leaves rounded, truncate, or retuse at the apex, tomentum early deciduous — *A. flórida*
   b. Leaves finely serrate; main lateral veins curving upwards and anastomosing towards the margin, irregularly spaced, with smaller intermediate veins
      (1) Tall shrubs or small trees not forming colonies; leaves acute to acuminate
         (a) Leaves at flowering time three-fourths grown, nearly glabrous, bronze-purple — *A. laévis*
         (b) Leaves scarcely unfolded at flowering time, white-tomentose, green — *A. canadénsis*
      (2) Low shrub in colonies; leaves rounded at apex — *A. stolonífera*
2. Flowers solitary or in clusters of 2 or 3; leaves imbricated in the bud, not folded — *A. Bartramiána*

CRATAÉGUS — THORN, HAWTHORN

(Gr. *krataegos,* a thorn)

Thorny shrubs or small trees with simple, lobed or unlobed leaves; flowers in corymbs, white or pink, epigynous; sepals 5; petals 5; stamens 5–25; carpels 2–5 (rarely 1); ovaries united, inferior, their top covered by a disk; styles free; fruit a pome, the carpels forming 1-seeded stones or nutlets. A huge genus of the greatest taxonomic difficulty; in many cases both flowers and ripe fruit are necessary to determine the species.

1. Leaves broadest at or above the middle, cuneate at the base
   a. Leaves pubescent above, glabrous below; thorns 1–2.5 cm. long; fruit nearly black — *C. Douglásii*
   b. Leaves glabrous or pubescent, the lower surface tending to be more pubescent than the upper; thorns over 3 cm. long; fruit red
      (1) Leaves broadest above the middle; sepals not gland-margined
         (a) Leaves shining, glabrous, not impressed-veined above — **C. Crús-Gálli*
         (b) Leaves dull, pubescent beneath, impressed-veined above — *C. punctáta*
      (2) Leaves broadest at the middle, sepals with marginal glands
         (a) Leaves impressed-veined above; sepals serrate
            m. Sepals laciniate-serrate
               x. Stamens 10; filaments short and thick — *C. succulénta*

y. Stamens 20; filaments long and slender — *C. calpodéndron*
n. Sepals slightly serrate — *C. pertomentósa*
(b) Leaves not impressed-veined; sepals gland-margined but not serrate — *C. rotundifólia*

2. Leaves broadest below the middle
a. Leaves tomentose beneath; corymbs tomentose
(1) Mature leaves coriaceous, with broad, blunt teeth — *C. pertomentósa*
(2) Mature leaves thin, their teeth long and acuminate
(a) Leaves broadly cuneate at base; stamens 10, with cream-colored anthers — *C. submóllis*
(b) Leaves mostly cordate at base; stamens 20, with yellow anthers — *C. móllis*
b. Leaves glabrous beneath or sparingly villous along the veins; corymbs glabrous or villous (not tomentose)
(1) Average leaves 4–5 cm. long, lobed — *C. roanénsis*
(2) Average leaves 7–8 cm. long, scarcely lobed — *C. macrospérma*

COTONEÁSTER — FIRE THORN

(Name New Latin, signifying a little quince)

Unarmed shrubs with deciduous or evergreen, entire, stipulate leaves; flowers white or pink, terminal, solitary or clustered, epigynous; sepals 5, persistent; petals 5; stamens about 20; carpels 2–5; ovaries inferior, united; fruit a small, berry-like pome with 2–5 2-seeded stones.

Low, bushy shrub with deciduous leaves and black fruit — **C. lúcida*

ARÓNIA — CHOKEBERRY

(L. *aronia,* formed from *aria,* the beam tree)

Low, deciduous shrubs with simple, crenate-serrate leaves; flowers in compound cymes, white or pinkish; sepals 5, persistent; petals 5; stamens numerous; carpels 5; ovaries inferior, united; styles united at the base; fruit a small, red or black, berry-like pome.

1. Leaves tomentose beneath; pedicels and sepals tomentose; fruit red — **A. arbutifólia*
2. Leaves soon glabrate; pedicels and sepals not tomentose; fruit black — *A. melanocárpa*

Leguminósae — Pea Family

[Fabaceae]

Herbs, shrubs, vines, or trees with alternate, mostly compound leaves; sepals 4–5; petals 5, rarely fewer; stamens 10, usually in two groups; pistil 1, simple, 1–many-seeded; flower apopetalous, hypogynous or perigynous, irregular. The typical flower of this family, e.g., the pea, has the sepals united into an irregular cup. The petals are of three forms, an upper odd petal (standard), two lateral spreading petals (wings) and the two lower ones (keel) more or less united and enclosing the stamens and pistil. The stamens are usually united by their filaments in a group of nine, the tenth stamen being free.

I. Trees and shrubs
1. Petals 5; 9 stamens united, 1 free
a. Flowers in drooping racemes, white or pink — *Robinia*
b. Flowers solitary or in small umbel-like clusters, yellow — *Caragana*
2. Petal 1; stamens 10, nearly separate; flowers blue or purple — *Amorpha*

II. Herbs
1. Leaves pinnate
a. Leaves tendril-bearing at the tip
(1) Stipules semi-sagittate, smaller than the leaflets
(a) Style round, hairy-tufted at the tip — *Vicia*
(b) Style dorsally flattened, bearded along the inner face — *Lathyrus*
(2) Stipules semi-cordate, as large as the leaflets, style laterally flattened — *Pisum*
b. Leaves not tendril-bearing
(1) Leaflets more than 3; plants perennial
(a) Keel acuminate — *Oxytropis*
(b) Keel obtuse — *Astragalus*
(2) Leaflets 3; plant biennial — *Melilotus*

2. Leaves palmate
   a. Flowers in heads or interrupted bracted spikes
      (1) Plants silvery gray; leaflets 3–5; flowers purple, in interrupted spikes — *Psoralea*
      (2) Plants not silvery gray; flowers pink, white, or yellow, in heads — *Trifolium*
   b. Flowers in elongated spikes
      (1) Leaflets 7–11; flowers generally blue — *Lupinus*
      (2) Leaflets 3; flowers cream-color — *Baptisia*

ROBÍNIA — LOCUST

(Named for the brothers Robin)

Trees or shrubs with odd-pinnate leaves and stipular spines; flowers in racemes, white or rose-pink; calyx 5-toothed; standard rounded, reflexed; pistil stalked; fruit a flat, several-seeded pod.

1. Flowers white and fragrant; twigs glabrous — *R. Pseúdo-Acácia*
2. Flowers rose-pink; twigs bristly — **R. híspida*

CARAGÁNA — PEA TREE

(Tartar name of original species)

Shrubs or small trees, sometimes spiny, with even-pinnate or digitate, alternate or fascicled leaves; flowers solitary or in few-flowered, umbel-like clusters, yellow; calyx 5-toothed, the upper sepals smallest; standard long-clawed, with reflexed sides; pistil nearly sessile; fruit a cylindrical, pointed pod.

1. Low shrub with sessile leaves mostly in fascicles subtended by a 3-pointed spine — **C. pygmaéa*
2. Erect shrubs or small trees; leaves petioled, spines stipular or none
   a. Leaves digitate, leaflets 4 — **C. frutéscens*
   b. Leaves pinnate, leaflets 8–12 — **C. arboréscens*

AMÓRPHA — FALSE INDIGO

(Gr. *a-*, without, *morphe*, form, i.e., unlike the pea)

Shrubs with odd-pinnate leaves; flowers in terminal spikes, violet or purple; calyx 5-toothed, persistent; standard wrapped about the stamens and pistil, other petals wanting; stamens free except at the very base; fruit an oblong 1–2-seeded pod.

1. Tall shrub, 1–3 m.; leaflets 2–5 cm. long — *A. fruticósa*
2. Low shrub, 3 dm. or less; leaflets 6–10 mm. long — *A. microphýlla*

VÍCIA — VETCH

(L. *vicia*, a vetch)

Annual or perennial herbs, mostly vine-like; leaves pinnate with a terminal tendril and half-sagittate stipules; calyx 5-toothed or 5-cleft, the upper teeth shorter; wings and keel adhering; style slender, with a tuft of hairs at the end; fruit a flattened, 2–several-seeded pod.

1. Racemes dense, 1-sided, 15–20-flowered — *V. crácca*
2. Racemes loose, 1–20-flowered
   a. Leaflets ovate, about one-third as wide as long — *V. americána*
   b. Leaflets linear, about one-tenth as wide as long — *V. lineáris*

LÁTHYRUS — SWEET PEA

(Gr. *lathyros*, a kind of pulse)

Annual or perennial herbs, mostly vine-like; leaves pinnate with a terminal tendril and half-sagittate stipules; calyx 5-toothed; wings and keel nearly free; style flattened upwards, bearded on its upper face; fruit a flattened, several-seeded pod.

1. Stipules broad and leaf-like
   a. Flowers yellowish — *L. ochroleúcus*
   b. Flowers pink-purple — *L. marítimus*
2. Stipules narrow, much smaller than the leaflets
   a. Leaflets broadly ovate, 15–20 mm. wide — *L. venósus*
   b. Leaflets lanceolate, 5–10 mm. wide — *L. palústris*

PÍSUM — PEA

(L. *pisum,* a pea)

Annual vine-like herbs; leaves pinnate with a terminal tendril and large foliaceous stipules; calyx 5-toothed; wings and keel nearly free; style flattened laterally and bearded; fruit a flattened, several-seeded pod.

Plant with white flowers and edible seeds — **P. satívum*

OXÝTROPIS — LOCO WEED

(Gr. *oxys,* sharp, *tropis,* keel)

[Aragalus]

Low perennial herbs; leaves mostly basal, odd pinnate with numerous leaflets; flowers in heads or short spikes on naked peduncles; calyx 5-toothed; corolla narrow, keel acuminate with a sharp projecting appendage; pod plump, 1-celled or 2-celled with a false partition.

Leaves all basal; flowers purple — *O. Lambérti*

ASTRÁGALUS — GROUND PLUM, BUFFALO PEA

(Gr. *astragalos,* a kind of pulse)

Mostly perennial herbs; leaves odd-pinnate with several to many leaflets; flowers in (sometimes short) racemes or spikes; calyx 5-toothed; corolla narrow, keel blunt; pods various, short, several to many-seeded, often nearly spherical, and frequently 2-celled with a false partition.

1. Flowers violet-purple
   a. Flowering in April and early May; calyx not black-hairy — *A. caryocárpus*
   b. Flowering about June first; calyx markedly black-hairy — *A. hypoglóttis*
2. Flowers yellow; plant long-hairy — *A. lotiflórus*

MELILÓTUS — SWEET CLOVER

(Gr. *meli,* honey, *lotos,* a plant)

Erect biennial (rarely annual) herbs with deep taproots; leaves pinnately trifoliolate, fragrant when crushed; flowers in racemes, small; calyx 5-cleft; petals free from the stamens, deciduous; fruit a nearly indehiscent, 1–2-seeded, wrinkled, ovoid pod longer than the persistent calyx.

Flowers yellow, in long slender racemes — *M. officinális*

PSORÁLEA — PSORALEA

(Gr. *psoraleos,* scurfy, from the glands or dots)

Perennial herbs with gland-dotted foliage; leaves palmately 3–5-foliolate; flowers in spikes or racemes; calyx 5-cleft, the lower sepal longest; fruit an indehiscent, 1-seeded, wrinkled pod shorter than the persistent calyx.

1. Much-branched; petioles little longer than the leaves — *P. argophýlla*
2. Little-branched; lower petioles 3–4 times longer than the leaves — *P. esculénta*

TRIFÓLIUM — CLOVER

(L. *tri-,* three, *folium,* leaf)

Annual or perennial, upright or decumbent herbs with palmately (rarely pinnately) trifoliolate leaves; flowers small, in heads or head-like racemes; calyx 5-cleft, the teeth often reduced to bristles; petals more or less fused with the stamen tube, usually withering persistent; fruit 1–6-seeded, indehiscent or follicle-like, often included in the persistent calyx.

1. Flowers yellow, heads 8–12 mm. in diameter — *T. procúmbens*
2. Flowers white to pink, heads more than 12 mm. in diameter
   a. Stems creeping; flowers white or pinkish — *T. répens*
   b. Stems erect or ascending
      (1) Heads sessile, involucrate; flowers deep pink — *T. praténse*
      (2) Heads stalked, not involucrate; flowers white or pinkish — *T. hýbridum*

LUPÍNUS — LUPINE

(L. *lupinus,* lupine)

Upright herbs with palmately compound leaves, usually with several to many leaflets; flowers showy, in erect racemes or spikes; calyx 2-lipped; sides of standard reflexed; keel scythe-shaped; stamens monodelphous; fruit an oblong, flattened pod, often constricted between the seeds. Our only species, the blue-flowered *L. perénnis.*

BAPTÍSIA — FALSE INDIGO

(Gr. *baptizo,* to dye, used as indigo)

Perennial herbs with palmately 3-foliolate leaves; flowers showy, in racemes; calyx 4–5-toothed; sides of standard reflexed; keel petals separate, straight; stamens free; pod stalked in the persistent calyx, inflated, pointed.

1. Plants pubescent; stipules leaf-like — *B. bracteáta*
2. Plants glabrous and succulent; stipules linear — *B. leucántha*

Saxifragáceae — Saxifrage Family

Herbs or shrubs; sepals 5, rarely 4; petals 5, rarely none; stamens 5–10 or many; ovary 1–several-celled; flower syncarpous, apopetalous (rarely apetalous), perigynous to epigynous, regular or irregular.

I. Herbs
- 1. Petals present
  - a. Stamens 5 — *Heuchera*
  - b. Stamens 10
    - (1) Petals entire — *Saxifraga*
    - (2) Petals fringed — *Mitella*
- 2. Petals absent — *Chrysosplenium*

II. Shrubs
- 1. Stamens 5; ovary 1-celled — *Ribes*
- 2. Stamens 20–40; ovary 3–5-celled — *Philadelphus*

PLATE 11: A, Saxifraga pennsylvanica, 1, flower, 2, fruit; B, Mitella diphylla, 1, flower, 2 and 3, fruit; C, Heuchera hispida, 1, fruit, 2, flower; D, Chrysosplenium americanum, 1, flower, 2, fruit; E, Ribes americanum, 1, flowers, 2, fruits; F, Philadelphus grandiflorus, 1, flower, 2, fruit.

HEÚCHERA — ALUM ROOT

(Named for the botanist Heucher)

Perennial herbs with long-petioled, mainly basal leaves, from a thickened, erect or ascending rhizome; flowers paniculate, greenish or purplish, sometimes white or red; hypanthium campanulate, often oblique; sepals 5; petals small, spatulate; stamens 5; styles 2; ovary 1-celled with 2 parietal placentae; fruit a 2-beaked capsule. Pl. 11, fig. C. Only one species in our flora, *H. híspida.*

SAXÍFRAGA — SAXIFRAGE

(L. *saxifragus,* stone-breaking)

Perennial herbs with entire or dentate leaves from a short, thickened caudex; flowers in paniculate cymes; calyx 5-cleft or parted, adnate to the base of the ovary (sometimes nearly free), petals narrowly ovate to lanceolate; stamens 10; styles 2; ovary 2-celled; capsule 2-beaked, the beaks spreading. Pl. 11, fig. A.

1. Swamp plant with entire basal leaves; flowers greenish — *S. pennsylvánica*
2. Dry land plant; leaves dentate; flowers white — *S. virginiénsis*

MITÉLLA — MITREWORT

(Gr. *mitra,* headdress)

Perennial herbs with long-petioled, ovate or orbicular basal leaves and naked or 1–2-leaved flowering stalks; flowers in racemes, white or greenish; calyx 5-lobed, adnate to the ovary; petals

3-cleft or pinnatifid; stamens 5–10; ovary 1-celled; capsule short, 2-valved at the summit; seeds smooth and shining. Pl. 11, fig. B.

1. Flowering stem with two opposite leaves below the flowers — *M. diphýlla*
2. Flowering stem naked or a small leaf below the flowers — *M. núda*

CHRYSOSPLÉNIUM — GOLDEN SAXIFRAGE

(Gr. *chrysos,* golden, *splenion,* spleenwort)

Low, somewhat succulent herbs of moist situations; leaves opposite or alternate, roundish, crenate; flowers small, greenish, axillary or terminal; calyx 4–5-lobed, adnate to the ovary; petals none; stamens 8–10 (rarely 4–5); ovary 1-celled; styles 2; capsule very short, 2-valved at the top, several-seeded. Pl. 11, fig. D. A single species in our flora, *C. americánum.*

RÍBES — GOOSEBERRY, CURRANT

(The Arabic name)

Shrubs, often spiny or prickly, with alternate, palmately lobed leaves; flowers in racemes or subsolitary; hypanthium adherent to the ovary, 5-lobed, saucer-shaped, campanulate, or tubular; sepals 5; petals 5; stamens 5; ovary 1-celled; styles 2, distinct or united; fruit a berry. Pl. 11, fig. E.

1. Flowers in racemes; pedicel jointed at the base of the flower (Currants)
   - (1) Stems very prickly; hypanthium saucer-shaped — *R. lacústre*
   - (2) Stems smooth
     - a. Hypanthium campanulate to saucer-shaped or nearly obsolete
       - (a) Hypanthium saucer-shaped or nearly obsolete; leaves without yellow resinous glands on the lower surface
         - m. Racemes compact; bracts longer than the pedicels with very glandular margins — *R. alpínum*
         - n. Racemes lax; pedicels much exceeding the bracts
           - (m) Pedicels and ovaries covered with stalked glands — *R. prostrátum*
           - (n) Pedicels and ovaries without stalked glands
             - r. Flowers purplish; low creeping or ascending shrub — *R. tríste*
             - s. Flowers greenish-yellow; erect shrub — **R. vulgáre*
       - (b) Hypanthium campanulate or crateriform; leaves with yellow resinous dots on the lower surface
         - m. Hypanthium campanulate; 2.5–5 mm. high; flowers greenish-yellow; flowering racemes drooping
           - (m) Bracts 5–8 mm. long, exceeding the pedicels — *R. americánum*
           - (n) Bracts less than 3 mm. long, much shorter than the pedicels — **R. nigrum*
         - n. Hypanthium crateriform, about 1 mm. high; flowers white; flowering racemes erect — *R. hudsoniánum*
     - b. Hypanthium long-tubular; flowers bright yellow, fragrant — *R. odorátum*
2. Peduncles 1–4-flowered, borne at the summit of short leafy shoots; pedicels not jointed at the base of the flower; stems more or less prickly or spiny (Gooseberries)
   - (1) Ovary bristly; fruit prickly; styles united to the summit — *R. Cynósbati*
   - (2) Ovary glabrous, pubescent, or with stalked glands; styles free above the middle
     - a. Stamens and styles long-exserted (about 1 cm.); flowers greenish-white — *R. missouriénse*
     - b. Stamens and styles little or not at all exserted; flowers greenish or purplish
       - (a) Stamens about equalling the petals — *R. oxyacanthoídes*
       - (b) Stamens twice as long as the petals
         - m. Hypanthium broadly campanulate, pubescent; ovary pubescent, often glandular — **R. Grossulária*
         - n. Hypanthium narrowly campanulate; ovary glabrous, rarely sparingly pubescent or with stalked glands — *R. hirtéllum*

PHILADÉLPHUS — SYRINGA, MOCK ORANGE

(Gr. *philadelphon*, a sweet flowering shrub)

Shrubs with opposite, petioled leaves without stipules; flowers large and showy, terminal or axillary; calyx tube top-shaped, 4–5-lobed, adnate to the ovary; petals 4–5, rounded or obovate; stamens many; ovary 3–5-celled; styles 3–5, distinct or united at the base; capsule splitting into 3–5 valves, many-seeded. Pl. 11, fig. F.

1. Flowers in racemose clusters of 5–9, odorous
   a. Shrub 3–5 m. high; leaves remotely serrate, pubescent beneath **P. Coronária*
   b. Shrub 1–2 m. high; leaves nearly entire, glabrous beneath **P. Lemoínei*
2. Flowers solitary or in clusters of 3 or rarely 5, nearly scentless; leaves remotely denticulate **P. grandiflórus*

Myrtales Myrtle Order

Onagráceae — Evening Primrose Family

Herbs with opposite or alternate leaves; sepals (usually) 4; petals 4; stamens 4 or 8; ovary 4-celled; flower syncarpous, apopetalous, epigynous, regular or somewhat irregular.

GAÚRA — GAURA

(Gr. *gauros*, proud)

Herbs with alternate, sessile leaves; flowers somewhat irregular, epigynous with an obconical hypanthium; sepals 4; petals 4, unequal or unequally bent upwards; stamens 8; stigma 4-lobed with a ring-like border; fruit nut-like. One species in our flora, *G. coccínea*.

Thymelaeáceae — Leatherwood Family

Shrubs with simple leaves; sepals 4–5; petals 0; stamens 8–10; pistil 1, simple; flower apetalous, perigynous, regular, the sepals more or less fused into a bell-shaped calyx.

DÍRCA — LEATHERWOOD

(Greek name of a fountain)

A much-branched, low shrub with very tough, fibrous bark; leaves alternate, entire; flowers appearing before the leaves, perigynous, apetalous; calyx corolla-like, tubular funnel-shaped; sepals 4, obscure; stamens 8; ovary 1-celled; fruit a drupe. Only one species in our flora, *D. palústris*.

Elaeagnáceae — Oleaster Family

Shrubs with silvery leaves; sepals 4; petals 0; stamens 4–8; pistil 1, simple; flower apetalous, apparently epigynous, regular, often dioecious, the staminate flower with a disk.

1. Stamens 4; flowers often perfect *Elaeagnus*
2. Stamens 8; flowers dioecious *Shepherdia*

ELAEÁGNUS — SILVERBERRY

(Gr. *elaiagnos*, a marsh shrub)

Shrubs or trees with alternate, scurfy, silvery leaves; flowers perigynous (apparently epigynous, as the lower part of the hypanthium closely invests the ovary), apetalous, perfect; calyx campanulate, sepals 4; stamens 4; ovary 1-celled; fruit drupe-like — really a nutlet surrounded by the fleshy hypanthium.

1. Twigs with brown scales, thornless; native shrub *E. argéntea*
2. Twigs without brown scales, often thorny; cultivated tree **E. angustifólia*

SHEPHÉRDIA — BUFFALO BERRY

(Named for John Shepherd, an English botanist)

Shrubs or small trees with opposite, scurfy, often silvery leaves; flowers apetalous, dioecious; staminate flower with 4 sepals, 8 stamens; pistillate flower perigynous (apparently epigynous as in Elaeagnus), with 4 sepals and 1 pistil, the ovary 1-celled, concealed in the urn-shaped hypanthium; fruit drupe-like — a nutlet surrounded by the fleshy hypanthium.

1. Leaves green above, silvery beneath; thornless shrub *S. canadénsis*
2. Leaves silvery on both sides; mostly thorny shrub *S. argéntea*

Santalales Sandalwood Order

Santaláceae — Sandalwood Family

Herbs with alternate simple leaves; sepals 3–6; petals 0; stamens 3–6; ovary 1-celled; flower syncarpous, apetalous, epigynous with a disk, regular.

COMÁNDRA — TOADFLAX

(Gr. *coma,* tuft of hairs, *aner,* man, referring to the anthers)

Smooth perennial herbs (root parasites) with entire, alternate leaves; flowers epigynous, apetalous, perfect, small, borne in a cymose corymb or panicle; hypanthium bell- or urn-shaped, lined with a disk whose 5-lobed border simulates minute petals; sepals 5; stamens 5, opposite the sepals; ovary inferior, 1-celled with a central placenta; fruit nut-like.

1. Rootstock deep; flowers in a panicle with diverging branches — *C. umbellàta*
2. Rootstock superficial; flowers in a corymb with ascending branches — *C. Richardsiána*

Loranthàceae — Mistletoe Family

Parasitic green or almost colorless herbs or shrubs; sepals 2–6; petals 0; stamens 2–6; ovary 1-celled; flower apetalous, epigynous, regular, monoecious or dioecious.

ARCEUTHÓBIUM — SMALL MISTLETOE

(Gr. *arkeuthos,* the juniper, *bios,* life)

[Razoumofskya]

Dwarf, yellowish herbs with scale-like, connate, opposite leaves, parasitic on the branches of conifers; flowers minute, dioecious; staminate flower usually with 3 sepals, with a single-celled anther on each; pistillate flower with 2 sepals and an inferior ovary; fruit a compressed 1-seeded berry. Only one species in our flora, *A. pusíllum,* parasitic on spruce trees.

Aristolochiales Birthwort Order

Aristolochiáceae — Birthwort Family

Herbs or shrubs with alternate or basal leaves, often aromatic; sepals 3 or 6; petals 0; stamens 6–many; ovary 6-celled; flower syncarpous, apetalous, epigynous, regular or irregular.

1. Low creeping herbs; flowers regular — *Asarum*
2. Tall woody vines; flowers irregular — *Aristolochia*

ÁSARUM — WILD GINGER

(Gr. *asaron,* name of a plant)

Aromatic creeping herbs; rootstock bearing 1 or 2 large heart-shaped or kidney-shaped leaves and a single terminal flower; flower perfect, partially or wholly epigynous, apetalous or with 3 rudimentary petals; calyx bell-shaped; sepals 3; petals wanting in our species; stamens 12; ovary 6-celled, wholly inferior in our species; fruit a somewhat fleshy capsule. Only one species in our flora, *A. canadénse.*

ARISTOLÓCHIA — DUTCHMAN'S PIPE

(Gr. *aristos,* best, *locheia,* birth)

Perennial herbs or woody vines with alternate leaves; calyx tubular, bent, often with an expanded limb; petals wanting; stamens 6, united with the style; ovary inferior, 4–6-celled. A commonly planted vine with large leaves and curious pipe-shaped flowers, * *A macrophýlla.*

Rhamnales Buckthorn Order

Rhamnáceae — Buckthorn Family

Shrubs or small trees, with alternate simple leaves; sepals 4–5; petals 4–5, rarely none; stamens 4–5, opposite the petals; ovary 2–5-celled; flower syncarpous, apopetalous or apetalous, perigynous with a disk, regular.

RHÁMNUS — BUCKTHORN

(Gr. *rhamnos,* buckthorn)

Shrubs or small trees with alternate or partly opposite, simple leaves; flowers clustered, small and greenish, perfect or polygamous, perigynous; hypanthium campanulate, lined with a disk; sepals 4–5; petals 4–5; stamens 4–5, in front of the petals; ovary 3–4-celled, style 3–4-cleft; fruit a berry-like drupe with 3–4 seed-like nutlets.

1. Flowers usually dioecious; nutlets deeply grooved
   a. Petals present; sepals and stamens 4; cultivated — **R. cathártica*
   b. Petals lacking; sepals and stamens 5; native — *R. alnifólia*
2. Flowers perfect; nutlets smooth; cultivated — **R. frángula*

Vitáceae — Grape Family

Woody vines with alternate leaves; sepals 4–5, often minute; petals 4–5, often disappearing as the flower opens; stamens 4–5; ovary 2–6-celled; flower syncarpous, apopetalous, hypogynous or perigynous with a disk, regular.

VÍTIS — GRAPE

(L. *vitis,* grapevine)

Woody vines, climbing by tendrils; flowers in a compound panicle, small, fragrant, perfect or dioecious, hypogynous; calyx very short, often nearly unlobed; petals 5, falling as the flower opens; hypogynous disk with 5 nectar-bearing glands alternating with the stamens; ovary 2-celled; fruit an edible 2–4-seeded berry.

1. Lower leaf surface velvety; berries large, cultivated — **V. labrúsca*
2. Lower leaf surface smooth, or pubescent along the veins; berries small, native
   a. Lower leaf surface whitened; leaf margin crenate-dentate — *V. bícolor*
   b. Lower leaf surface green; leaf margin strongly sharp-dentate or lobed — *V. vulpína*

Sapindales Maple Order

Aquifoliáceae — Holly Family

Shrubs and small trees with alternate simple leaves; sepals 4–8; petals 4–8, sometimes slightly united at the base; stamens 4–8, alternate with the petals; ovary 4–8-celled; flower syncarpous, apopetalous, or slightly sympetalous, hypogynous without a disk, regular.

NEMOPÁNTHUS — MOUNTAIN HOLLY

(Gr. *nema,* thread; *pous,* foot; *anthos,* flower)

A much-branched shrub with gray bark and alternate leaves; flowers small, greenish-yellow, on thread-like axillary pedicels, hypogynous, polygamo-dioecious; sepals 4–5, minute; petals 4–5; stamens 4–5; ovary 3–5-celled; fruit a berry-like drupe with 3–5 bony nutlets. Only one species, *N. mucronáta.*

Staphyleáceae — Bladdernut Family

Trees or shrubs with opposite pinnate leaves; sepals 5; petals 5; stamens 5; ovary 2–3-celled; fruit bladdery; flower syncarpous, apopetalous, perigynous with a disk, regular.

STAPHYLÉA — BLADDERNUT

(Gr. *staphyle,* a bunch of grapes)

Shrubs or trees with opposite compound leaves; flowers perfect, regular, clustered; sepals 5; petals 5; stamens 5, opposite the sepals; disk conspicuous; ovary mostly 3-celled; styles 3, slightly coherent; fruit a bladdery capsule, 3-celled with 1 seed in each cell.

Shrub with trifoliolate leaves and white flowers in racemes — *S. trifólia*

Sapindáceae — Soapberry Family

Trees or shrubs, with alternate, sometimes opposite, compound leaves; sepals 4–5; petals 3–5; stamens 5–10, rarely numerous; ovary 2–4-celled; flower syncarpous, apopetalous, hypogynous with a disk, dioecious or polygamous, mostly irregular.

AÉSCULUS — HORSE CHESTNUT, BUCKEYE

(The Latin name)

Trees or shrubs with opposite, palmately compound leaves; flowers in a terminal panicle, irregular, often polygamous; calyx tubular, 5-lobed; petals 4–5, unequal; stamens 6–8, unequal in length; ovary 3-celled; style 1; fruit a leathery capsule containing 1–3 very large seeds.

1. Flowers white, yellow- or purple-spotted; leaflets abruptly acuminate — **A. hippocástanum*
2. Flowers yellow; leaflets long acuminate — **A. glábra*

Aceráceae — Maple Family

Trees or large shrubs with opposite, lobed or compound leaves; sepals 5; petals 5 or 0; stamens usually 5 or 8; ovary 2-celled; fruit a pair of winged pistils; flower syncarpous, apopetalous or apetalous, perigynous, usually with a disk, dioecious or polygamous, regular.

ÁCER — MAPLE

(L. *acer*, maple tree)

Characteristics of the family.

1. Leaves simple
   - a. Shrubs; flowers in racemes or narrow panicles; native — *A. spicátum*
   - b. Trees; flowers in panicles, corymbs, or umbel-like clusters; native and cultivated
     - (1) Leaves pinnately veined, irregularly serrate; flowers in terminal panicles — **A. tatáricum*
     - (2) Leaves palmately lobed; lobes coarsely dentate-serrate, or cut, or almost entire; flowers in corymbs or umbel-like clusters
       - (a) Flowers greenish, appearing with the leaves
         - x. Flowers in erect, flat-topped panicles; wings of fruit long, spreading — **A. platanoídes*
         - y. Flowers in pendent, umbel-like clusters, long pedicelled; wings of fruit short, not spreading
           - (x) Leaves with shallow lobing; sinus at the base closed; petioles and veins beneath pubescent — *A. nígrum*
           - (y) Leaves with deeper lobing; sinus at the base shallow or none; petioles glabrous — *A. sacchárum*
       - (b) Flowers red or yellowish red, appearing from separate buds before the leaves
         - x. Petals absent; leaves deeply 5-lobed; lobes narrow at the base — *A. saccharínum*
         - y. Petals present; leaves about 3-lobed; lobes not narrow at the base — *A. rúbrum*
2. Leaves compound; flowers strictly dioecious — *A. Negúndo*

Anacardiáceae — Sumac Family

Trees, shrubs, or woody vines, usually with compound alternate leaves; sepals 3–7, usually 5; petals 3–7 or 0; stamens 3–7; ovary 1-celled; styles 1–3; flower syncarpous, apopetalous, perigynous with a disk, regular.

RHÚS — POISON IVY

(Gr. *rhous*, sumac)

Shrubs, trees, or woody vines usually with alternate, compound leaves; flowers in terminal or axillary panicles, small, polygamous; calyx 5-cleft; petals 5; stamens 5, alternating with the petals; disk lobed; ovary 1-celled; styles 3; fruit a drupe. Besides two or three entirely innocent shrubs blooming in midsummer we have the following species, both poisonous to touch. Both have white fruit.

1. Upright shrub in tamarack swamps; leaves odd-pinnate with 3–6 pairs of entire leaflets — *R. Vérnix*
2. Common creeping, erect, or climbing vine; leaves with 3 entire or, more frequently, coarsely crenate-dentate leaflets — *R. Toxicodéndron*

Juglandales Walnut Order

Juglandáceae — Walnut Family

Trees with alternate odd-pinnate leaves; flowers monoecious; the staminate in catkins; staminate flower with sepals 3–6 or 0, petals 0, stamens 3–many; pistillate flower with sepals 3–5, petals 4 or 0, ovary 1-celled, styles 2; flower syncarpous, apopetalous or apetalous, epigynous, regular.

1. Staminate catkins sessile, solitary or grouped; upper leaflets smaller than the middle ones — *Juglans*
2. Staminate catkins in groups of three with a common stalk; upper leaflets at least as large as the others — *Carya*

PLATE 12: A, Acer saccharum; B, Acer Negundo, 1, staminate flowers, 2, pistillate flowers; C, Betula papyrifera, 1, staminate catkin, 2, pistillate catkin; D, Corylus americana, 1, staminate catkin, 2, pistillate cluster; E, Juglans cinerea, 1, staminate catkin, 2, pistillate cluster; F, Quercus macrocarpa, 1, staminate catkins, 2, pistillate flowers.

JÚGLANS — BUTTERNUT, BLACK WALNUT

(L. *juglans,* walnut tree)

Large trees with dark-colored chambered pith; flowers monoecious; staminate flowers in catkins, which appear singly from special winter buds, each flower subtended by a bract, perianth 3–6-parted, stamens 8–40; pistillate flowers produced singly or in small clusters on the developing leafy shoots, epigynous, perianth mostly 4-parted, subtended by the fused bract and bractlets, all adnate to the ovary, stigmas 2, conspicuous; fruit a 1-seeded drupe, the endocarp very hard and rough.

1. Bark gray; twigs and foliage viscid-hairy — *J. cinérea*
2. Bark dark brown; twigs and foliage almost smooth — *J. nígra*

CÁRYA — HICKORY

(Gr. *carya,* nut, walnut)

Large trees with continuous pith; flowers monoecious; staminate in catkins, which are borne in 3's on a common peduncle; calyx adnate to the bract, 2–3-cleft; pistillate flowers 2–5 in a short spike, epigynous; sepals 4; stigmas 2–4, short; fruit drupe-like with a dehiscent husk and a 1-seeded smooth stone. In some species the winter bud-scales become greatly enlarged and petal-like in the spring, being often mistaken for flowers.

1. Bark shaggy; leaves white-tufted at margin — *C. ováta*
2. Bark not shaggy; mature leaves almost smooth — *C. cordifórmis*

Fagales Beech Order

Betuláceae — Birch Family

Trees or shrubs with alternate simple leaves; flowers monoecious, rarely dioecious, the staminate and often the pistillate also in catkins; staminate flower, sepals 2–4 or 0, petals 0, stamens 2–10; pistillate flower, sepals minute or 0, ovary 1–2-celled, style 2-cleft; flower syncarpous, epigynous, regular.

1. Pistillate flowers clustered, not in a raceme or catkin — *Corylus*
2. Pistillate flowers in a raceme or catkin
   a. Pistillate catkin small, terminal, few-flowered
      (1) Fruiting bract leaf-like, 3-lobed; bark smooth — *Carpinus*
      (2) Fruiting bract closed, sack-like; bark rough — *Ostrya*

b. Pistillate catkin compact, many-flowered
(1) Pistillate bracts 3-lobed, 3-flowered — *Betula*
(2) Pistillate bracts 5-lobed, 2-flowered — *Alnus*

CÓRYLUS — HAZELNUT
(Gr. *korys,* helmet)

Shrubs or small trees; flowers monoecious; staminate flowers in catkins, 1 in the axil of each bract, naked, stamens 4, forked, appearing as 8; pistillate flowers in small clusters from scaly buds, ovary crowned with a small perianth, stigmas 2, long and slender; fruit a nut enclosed in a leafy involucral husk. Pl. 12, fig. D.

1. Twigs and petioles densely hairy; involucre of nut short — *C. americána*
2. Twigs and petioles smooth; involucre with a beak — *C. rostráta*

CARPÍNUS — HORNBEAM
(Gr. *karpinos,* fruitful)

Small trees with smooth bark; flowers monoecious, both kinds in catkins; staminate flower 1 in the axil of each bract, naked, stamens 3–several; pistillate flowers 2 to each primary bract, each subtended by a secondary bract and 2 bractlets, which form a 3-lobed wing for the mature fruit; fruit a nutlet. The only species in our flora is *C. caroliniána.*

ÓSTRYA — IRONWOOD
(Gr. *ostrya,* tree with very hard wood)

Trees with scaly bark; flowers as in *Carpinus,* but in fruit the secondary bracts of the pistillate catkins form inflated sacks about the nutlets. The only species in our flora is *O. virginiána.*

BÉTULA — BIRCH
(L. *betula,* birch tree)

Trees or shrubs, often with papery bark; flowers monoecious, both kinds in catkins; staminate flowers usually 3 to each primary bract, each with a minute 2-parted perianth and 2-forked stamens (appearing as 4); pistillate flowers 2–3 to each primary scale, each subtended by 2 bractlets, naked, stigmas 2, persistent; fruit a lenticular nutlet with a marginal wing; the bracts of the fruiting catkin thin, deciduous with the nutlets.

1. Trees with silvery or creamy-white outer bark on upper trunk and main branches
   a. Leaves rhombic to triangular, doubly serrate to deeply cut; twigs slender and drooping; bark becoming dark-furrowed towards the base of the trunk
      (1) Leaves rhombic to triangular; twigs moderately drooping — **B. péndula*
      (2) Leaves deeply cut; twigs very slender and long-drooping — **B. péndula f. dalecárlica*
   b. Leaves ovate to cordate, serrate to doubly serrate; twigs not pendulous; bark not dark-furrowed towards the base
      (1) Leaves ovate, rounded or truncate at the base — *B. papyrífera*
      (2) Leaves cordate — *B. cordifólia*
2. Trees or shrubs with gray, yellowish, or reddish brown bark
   a. Trees, bark peeling in thin ragged layers on upper trunk and branches
      (1) Outer bark gray or yellowish, inner bark with wintergreen flavor — *B. lútea*
      (2) Outer bark greenish brown or reddish, inner bark without wintergreen flavor — *B. nígra*
   b. Shrubs or small trees; bark not peeling, grayish to reddish brown
      (1) Slender shrub, 0.5–3 m. high; leaves obovate to sub-orbicular; petioles 3–5 mm. long. — *B. púmila var. glandulífera*
      (2) Tall shrubs or small trees, 4–8 m. high; leaves elliptic, rhombic ovate, or obovate
         (a) Leaves elliptic to oblong-ovate; inner bark with wintergreen flavor — *B. Purpúsii*
         (b) Leaves rhombic-ovate to obovate; twigs without wintergreen flavor — *B. Sandbérgi*

ÁLNUS — ALDER

(L. *alnus,* alder)

Mostly tall shrubs; flowers monoecious, both kinds in catkins; staminate flowers 3 to each primary bract, each with a minute 4-parted perianth and 4 stamens; pistillate flowers 2 to each primary bract, each subtended by 2 bractlets, naked, stigmas 2, not persistent; fruit a nutlet with or without a marginal wing, the bracts of the fruiting catkin becoming hard and woody, persisting after the discharge of the nutlets.

1. Leaves finely serrate, resinous beneath when young — *A. crispa*
2. Leaves coarsely serrate, not resinous — *A. incana*

Fagáceae — Beech Family

Trees or shrubs with simple often deeply lobed or cleft leaves; flowers monoecious, the staminate in catkins; stáminate flower, sepals 4–7, petals 0, stamens 4–20; pistillate flower, sepals disappearing, petals 0, ovary 3-celled; flower syncarpous, epigynous, regular.

QUÉRCUS — OAK

(L. *quercus,* oak tree)

Trees or shrubs, our species with tardily deciduous, lobed, alternate leaves; flowers monoecious; staminate flowers in catkins with inconspicuous bracts, sepals 4–7, stamens 4–12; pistillate flowers solitary or in small clusters in the axils of the developing leaves, epigynous, sepals 6, united, ovary inferior, nearly 3-celled, stigmas 3, each flower surrounded at the base with a cup-like involucre consisting of numerous cohering scales; fruit an acorn, sometimes (Black Oaks) not ripening until the second autumn and therefore present in a half-grown condition in the spring.

1. Leaves lobed; lobes acute, bristle-pointed (Black Oaks)
   - a. Leaves dull green; lobes cut about halfway to the midrib; acorn cup shallow — *Q. boreális*
   - b. Leaves glossy; the lobes cut about three-fourths to the midrib; acorn cup about one-half as long as acorn
     - (1) Scales of cup loose, pubescent — *Q. velútina*
     - (2) Scales of cup appressed, smooth
       - (a) Acorn elongated; autumn foliage brown — *Q. ellipsoidális*
       - (b) Acorn nearly round; autumn foliage scarlet — *Q. coccínea*
2. Leaves with rounded lobes or crenate or toothed; lobes not bristle-tipped (White Oaks)
   - a. Leaves deeply round lobed
     - (1) Leaves dull, smooth; acorn cup not fringed — *Q. álba*
     - (2) Leaves glossy above, hairy below; acorn cup fringed — *Q. macrocárpa*
   - b. Leaves crenate or dentate, not deeply lobed
     - (1) Tree; leaves broadly rhombic; acorn long-peduncled — *Q. bícolor*
     - (2) Shrub or small tree; leaves more than twice as long as broad; acorn short-peduncled — *Q. prinoídes*

Myricales Sweet Gale Order

Myricáceae — Sweet Gale Family

Shrubs or trees with alternate aromatic simple leaves; flowers in catkins, monoecious or dioecious; staminate flower, sepals 0, petals 0, stamens 2–16; pistillate flower with 2–8 bracts, sepals 0, petals 0, ovary 1-celled, stigmas 2; flower syncarpous, naked.

1. Leaves entire or slightly serrate — *Myrica*
2. Leaves deeply cut — *Comptonia*

MYRÍCA — SWEET GALE

(Gr. *myrike,* tamarisk)

Shrubs or small trees with fragrant, alternate, entire or toothed leaves; flowers in catkins, monoecious or dioecious, naked, 1 flower to each bract of the catkin; staminate flower of 4–8 stamens, the filaments slightly united below; pistillate flower with 2–4 bractlets, ovary 1-celled; fruit a nutlet, often coated with wax. Only one species in our flora, the small swamp shrub, *M. gale.*

COMPTÓNIA — COMPTONIA

(Named for Bishop Compton)

A low branching shrub with fragrant, alternate, linear, pinnatifid leaves; flowers in catkins, monoecious, naked, 1 flower to each bract of the catkin; staminate catkins as in *Myrica;* pistillate flowers with 8 bractlets; pistillate catkins becoming bur-like in fruit. The only species, *C. asplenifólia.*

Umbellales Carrot Order

Araliáceae — Ginseng Family

Herbs with compound leaves; sepals 5, often minute; petals 5; stamens 5; ovary 2–5-celled; flower syncarpous, apopetalous, epigynous with a disk, regular; fruit a drupe.

1. Leaves in whorls; styles 2–3 — *Panax*
2. Leaves alternate, styles 5 — *Aralia*

PLATE 13: A, Aralia nudicaulis, 1, flowers, 2, fruits; B, Sanicula marilandica, 1, young flowers, 2, nearly mature fruits; C, Zizia aurea, 1, flowers, 2, fruits; D, Osmorhiza Claytoni, 1, fruits, 2, flowers; E, Cornus stolonifera, 1, flowers, 2, fruit; F, Cornus canadensis, 1, single flower, 2, flower cluster, 3, fruit cluster.

PÁNAX — GINSENG

(Gr. *panax,* a heal-all plant, a panacea)

Low perennial herbs with thickened roots and upright stems, which bear a single whorl of 3 palmately compound leaves; flowers in a simple terminal umbel, polygamo-dioecious; sepals minute; petals imbricate; styles 2–3; fruit a small yellow or red drupe.

Root small, globose — *P. trifólium*

ARÁLIA — WILD SARSAPARILLA

(Name unexplained)

Aromatic perennial herbs and shrubs with alternate, compound, or twice compound, sometimes very large leaves; flowers polygamous, in a corymb or panicle of umbels; sepals minute; petals imbricate; styles 5; fruit a small black drupe. Pl. 13, fig. A.

Leaf usually solitary from a slender rootstock, the leaflets pinnately compound; flowers on a naked scape. — *A. nudicaúlis*

Umbellíferae — Carrot Family

[Apiaceae]

Herbs with alternate and usually compound leaves; sepals 5, often very minute; petals 5; stamens 5; ovary 2-celled; styles 2; flower syncarpous, apopetalous, epigynous with a disk, regular; fruit a 2-seeded, usually 8- or 10-ribbed cremocarp, the two halves usually separating at maturity into achene-like mericarps. The genera are largely based on the technical characters of the fruit — the shape of the ribs, number of oil tubules, etc.

1. Ovary prickly, flowers polygamous — *Sanicula*
2. Ovary not prickly, flowers perfect
   a. Flowers white or pinkish
      (1) Lobes of leaflets linear; fruit round, flattened — *Lomatium*
      (2) Lobes of leaflets broad; fruit long, pointed — *Osmorhiza*
   b. Flowers yellow
      (1) Fruit flattened, winged — *Thaspium*
      (2) Fruit neither flattened nor winged — *Zizia*

SANÍCULA — SNAKEROOT

(L. *sano,* to heal)

Perennial glabrous herbs with palmately compound leaves; flowers yellowish or greenish, polygamous, borne in small irregular umbels often containing both staminate and perfect flowers; sepals evident; ovary prickly; fruit bur-like, the halves not separating.

1. Flowers greenish-white; sepals lanceolate, acute — *S. marilándica*
2. Flowers yellow; sepals short, obtuse — *S. gregária*

LOMÁTIUM — WILD PARSLEY

(Gr. *lomation,* fringe)

Nearly stemless perennials with dissected leaves and yellow or white flowers in compound umbels; involucre none; fruit oblong or round, dorsally flattened with winged margins; oil tubules numerous.

Low herb with much dissected leaves — *L. orientále*

OSMORHÍZA — SWEET CICELY

(Gr. *osme,* odor, *rhiza,* root)

Aromatic perennial herbs with ternately compound leaves and once to twice compound leaflets; flowers white or purplish in few-flowered compound umbels with few-leaved conspicuous involucres; sepals none, stylopodium well-developed; fruit elongate, not flattened, narrowed to the base, uniformly ribbed; no oil tubules in the ripe fruit.

1. Hairy; style and stylopodium short (1 mm. long) — *O. Cláytoni*
2. Nearly smooth; style and stylopodium long (2–3 mm. long) — *O. longístylis*

THÁSPIUM — MEADOW PARSNIP

(Gr. *thapsia,* a plant with a yellow dye)

Perennial herbs with ternately divided or compound leaves, and large coarsely-toothed leaflets; flowers yellow, in compound umbels; involucre with a few narrow bracts, inconspicuous; sepals evident; body of fruit somewhat flattened dorsally, but the flattening not very evident as the dorsal ribs are prominently winged; 1 oil tube in each interval between the ribs. Our only species, *T. barbinóde.*

ZÍZIA — ZIZIA

(Named for the botanist Ziz)

Smooth perennial herbs with simple or ternately divided or compound leaves; flowers yellow, in compound umbels without an involucre; sepals evident; fruit not dorsally flattened, the ribs prominent but not winged, 1 large oil tubule in each interval and 1 small one in each rib.

1. Basal leaves simple, cordate — *Z. cordáta*
2. Basal leaves compound, 2–3 times ternate — *Z. aúrea*

Cornáceae — Dogwood Family

Shrubs and trees, rarely herbs, usually with opposite leaves; sepals 4, rarely 5; petals 4; stamens 4; pistil 1–2-celled; style 1; flower syncarpous, apopetalous, epigynous with a disk, regular.

CÓRNUS — DOGWOOD

(L. *cornus,* cornel)

Shrubs or occasionally trees or perennial herbs with mostly opposite entire leaves; flowers in cymes or cymose heads, in the latter case often with an involucre of petal-like bracts; sepals much reduced; petals 4; stamens 4, alternate with the petals; ovary 2-celled, inferior; style and stigma 1; fruit a 1-stoned, 2-seeded drupe.

1. Dwarf herb; flowers minute, in a head with 4–6 white bracts — *C. canadénsis*
2. Shrubs; flowers without bracts
   - a. Leaves opposite
     - (1) Twigs green; leaves broadly ovate or orbicular — *C. rugósa*
     - (2) Twigs red or yellowish; leaves much longer than broad
       - (a) Leaves woolly-pubescent beneath — *C. Baileyi*
       - (b) Leaves nearly smooth beneath — *C. stolonífera*
   - b. Leaves alternate — *C. alternifólia*

Rubiales Madder Order

Rubiáceae — Madder Family

Herbs with simple opposite or whorled leaves; sepals usually 4, often rudimentary; petals 4 (rarely 3); stamens 4 (or 3); ovary 1–several-celled; styles 1 or 2; flower syncarpous, sympetalous, epigynous, regular.

1. Leaves in opposite pairs; flowers funnelform
   a. Creeping herbs; flowers in pairs; the ovaries united — *Mitchella*
   b. Erect plants; flowers in many-flowered cymes; ovaries not united — *Houstonia*
2. Leaves in whorls of 4 or more; flowers nearly flat — *Galium*

MITCHÉLLA — PARTRIDGE BERRY

(Named for the botanist Mitchell)

Creeping perennial herbs with opposite evergreen leaves; flowers terminal, in pairs with the inferior ovaries united; sepals 4; corolla salver-shaped with 4 petals; stamens 4; style 1; stigmas 4, either the style or the stamens exserted; fruit a red berry-like compound drupe. The only species in our flora, *M. répens*.

Plate 14: A, Galium boreale, 1, flowers, 2, fruits; B, Houstonia longifolia, 1, flowers, 2, fruits; C, Viburnum affine; D, Lonicera dioica, 1, flowers, 2, fruits; E, Diervilla Lonicera, 1, flower, 2, fruits; F, Triosteum aurantiacum, 1, flowers, 2, fruit; G, Linnaea borealis, 1, fruit, 2, plant with flowers.

HOUSTÓNIA

(Named for Houston, an English botanist)

Erect or creeping herbs with opposite leaves; flowers in 2–several-flowered cymes, pedicelled; sepals 4; corolla salver-shaped or funnel-shaped; petals 4; style slender; stigmas 2; ovary half inferior, 2-celled with numerous ovules; fruit a capsule. Pl. 14, fig. A. The only species in our flora, *H. longifólia*.

GÁLIUM — BEDSTRAW

(Gr. *galion*, bedstraw)

Weak herbs with whorled leaves; flowers small, in 2–many-flowered cymes or cymose panicles; sepals minute or wanting; corolla flat with 4 or rarely 3 petals; stamens 4 (rarely 3); styles 2, short; ovary wholly inferior, 2-lobed, 2-celled with one ovule in each cell; fruit a pair of nutlets. Pl. 14, fig. A.

1. Ovary and fruit bristly
   a. Stem weak with coarse bristles; flowers greenish — *G. aparíne*
   b. Stem upright, not bristly; flowers white — *G. boreále*
2. Ovary and fruit smooth — *G. tinctórium*

Caprifoliáceae — Honeysuckle Family

Herbs, shrubs or vines with opposite leaves; sepals 3–5, often very minute; petals 5; stamens 5; ovary 1–6-celled; style 1, often cleft; flower syncarpous, sympetalous, epigynous, regular or irregular.

I. Erect or climbing shrubs
   1. Leaves pinnately compound — *Sambucus*
   2. Leaves simple
      a. Corolla regular, rotate; erect shrubs — *Viburnum*
      b. Corolla bell- or funnel-shaped, somewhat 2-lipped

(1) Leaves entire; sepals vestigial — *Lonicera*
(2) Leaves serrate; sepals present, lanceolate — *Diervilla*

II. Herbs, or nearly herbaceous
1. Creeping, slightly woody; flowers in pairs on long stalks — *Linnaea*
2. Erect herb with sessile axillary flowers — *Triosteum*

SAMBÚCUS — ELDER

(L. *sambucus*, elder tree)

Shrubs with opposite, pinnately compound leaves; flowers in terminal cymose panicles; sepals mostly 5, minute; corolla flat or recurved with 5 petals; stamens 5; style very short and thick, 3-lobed; ovary 3–5-celled with one ovule in each cell; fruit a berry-like drupe with 3–5 small stones. Shrub with yellowish-white flowers and red berries — *S. púbens*

VIBÚRNUM — VIBURNUM

(L. *viburnum*, the wayfaring tree)

Shrubs or trees with simple opposite leaves; flowers in cymose clusters, regular, all perfect, or with larger neutral flowers at the margin of the cluster; sepals 5, small; corolla flat or short campanulate, petals 5; stamens 5, exserted; ovary 1–3-celled; style short, 3-lobed; fruit a drupe with 1 stone.

1. Leaves palmately veined, 3-lobed
   a. Flowers all perfect and alike; leaves not deeply lobed — *V. pauciflórum*
   b. Some or all of the flowers sterile; leaves more deeply 3-lobed and coarsely dentate
      (1) Outer flowers large and sterile, inner ones smaller and perfect — *V. trílobum*
      (2) All of the flowers sterile, in nearly spherical clusters — **V. Opulus* forma *steríle*
2. Leaves not lobed, pinnately veined, dentate or serrate
   a. Leaves finely serrate, not prominently veined
      (1) Leaves and inflorescence densely pubescent; cultivated — **V. Lantána*
      (2) Leaves and inflorescence glabrous; native — *V. Lentágo*
   b. Leaves coarsely dentate, veins prominent — *V. affíne*

LONÍCERA — HONEYSUCKLE

(Named for the botanist Lonitzer)

Erect shrubs or twining vines, with opposite, entire leaves; flowers in pairs or in small cymose clusters, somewhat irregular; sepals almost suppressed; corolla with a long tube somewhat gibbous at the base and a spreading 5-lobed limb, sometimes 2-lipped; stamens 5; ovary 1–3-celled, with numerous ovules; style slender; stigma capitate; fruit a many-seeded berry.

1. Flowers terminal, in dense clusters or interrupted spikes; upper leaves connate-perfoliate; usually vines
   a. Margin of leaves parchment-like, not ciliate
      (1) Leaves nearly or quite glabrous — *L. dioíca*
      (2) Leaves pubescent beneath — *L. dioíca* var. *glaucéscens*
   b. Margin of leaves green, ciliate — *L. hirsúta*
2. Flowers in pairs on axillary peduncles; leaves not connate-perfoliate; mostly upright shrubs
   a. Peduncles long and slender, over 1 cm. long
      (1) Leaves pubescent; native shrubs
         (a) Leaves thick, woolly; corolla 2-lipped — *L. oblongifólia*
         (b) Leaves thin, bristly; corolla nearly regular — *L. canadénsis*
      (2) Leaves glabrous; corolla not 2-lipped; cultivated — **L. tatárica*
   b. Peduncles mostly under 1 cm. long; leaves thick and veiny
      (1) Ovaries united; berry blue-black; native — *L. villósa*
      (2) Ovaries separate; berries red; cultivated — **L. Morrówi*

DIERVÍLLA — BUSH HONEYSUCKLE

(Named for Dierville)

Erect shrubs with opposite serrate leaves; flowers in small cymose clusters; sepals 5, linear; corolla with a tube somewhat gibbous at the base and a spreading, nearly regular, 5-lobed limb;

stamens 5; ovary 2-celled with numerous ovules; style filiform; stigma capitate; fruit a narrow, long-beaked capsule. Pl. 14, fig. E.

1. Native; flowers less than 2 cm. long, yellow — *D. Lonícera*
2. Cultivated; flowers more than 2 cm. long, rose-pink or white — **D. flórida*

LINNAEA — TWINFLOWER

(Named for the great Swedish botanist Linné)

A creeping vine with opposite evergreen leaves; flowers in pairs, pedicelled at the top of a slender upright peduncle; sepals 5, lanceolate; corolla bell-shaped, slightly oblique; petals 5; stamens 4; ovary 3-celled, 2 of the cells with abortive ovules; style slender; stigma capitate; fruit a one-seeded capsule. Pl. 14, fig. G. One species, *L. boreális.*

TRIÓSTEUM — HORSE GENTIAN

(Gr. *tri-,* three, *osteon,* bone)

Perennial herbs with opposite leaves; flowers clustered in the axils of the leaves, sessile; sepals 5, conspicuous, persistent; corolla with a gibbous tube and oblique 5-toothed limb; stamens 5; ovary 3–5-celled with 1 ovule in each cell; style slender; stigma 3–5-lobed; fruit a berry-like drupe with several stones. Pl. 14, fig. E. The only species in our flora, *T. aurantíacum.*

Adoxáceae — Muskroot Family

Herbs with basal and opposite compound leaves; sepals 2–3; petals 4–6; stamens 8–12 in pairs; ovary 3–5-celled; styles 3–5-cleft; flower syncarpous, sympetalous, half epigynous, regular.

ADÓXA — MUSKROOT

(Gr. *adoxos,* obscure)

A low herb with twice ternate leaves and several small flat greenish flowers on a slender peduncle. Pl. 15, fig. A. Only one species, *A. moschatéllina.*

Valerianáceae — Valerian Family

Herbs with alternate leaves and milky juice; sepals 5; petals 5; stamens 5; ovary 1–5-celled, stigmas 1–3; flower syncarpous, sympetalous, epigynous, somewhat irregular.

VALERIÁNA — VALERIAN

(L. *valeo,* to be strong)

Perennial herbs with strong-smelling roots; sepals developing in fruit as plumose hairs; flowers sometimes dioecious. Pl. 15, fig. C.

1. Leaves thick, parallel-veined; leaflets entire; native — *V. edúlis*
2. Leaves thin, reticulate-veined; leaflets dentate; cultivated — **V. officinális*

Campanales Bluebell Order

Campanuláceae — Bluebell Family

Herbs with alternate leaves and milky juice; sepals 5; petals 5; stamens 5; ovary 1–5-celled, ovules numerous; style 1; flower syncarpous, sympetalous, regular or irregular, epigynous.

CAMPÁNULA — BLUEBELL, HAREBELL

(Latin diminutive of *campana,* a bell)

Corolla bell-shaped to wheel-shaped; stigmas 3; capsule opening by 3 pores. Pl. 15, fig. B.
Basal leaves round, stem leaves linear; flowers blue, bell-shaped — *C. rotundifólia*

Compósitae — Thistle Family

Herbs (shrubs or trees) with flowers often of two kinds in dense involucrate heads; sepals (pappus) in the form of bristles, scales, teeth, and so forth, or wanting; petals 5 or 0; stamens 5; united by their anthers; ovary 1-celled, 1-ovuled; style 1, 2-cleft; stigmas 2; flower syncarpous, sympetalous, regular or irregular, epigynous. In the first subfamily all the flowers of the head, or more commonly only the central ones (disk flowers), are bell-shaped or salver-shaped; the marginal flowers of the head are often ligulate. In the second subfamily the flowers are all similar, the corolla

having a short tube beyond which it extends as a strap-shaped ray. The receptacle is flat or more or less conical, naked (i.e., bearing only the flowers) or bearing scales (chaff) among the flowers. The head is surrounded by one or more rows of involucral bracts.

I. Some or all of the flowers tubular; sap not milky — Sub-family *Tubuliflorae* [*Asteraceae*]
  1. Flowers on scaly-bracted scapes; foliage leaves appearing separately and somewhat later
    a. Heads several, bracts sheathing, flowers white to purplish — *Petasites*
    b. Heads single, bracts not sheathing, flowers yellow — *Tussilago*
  2. Flowers on leafy stems or at least leafy at the base
    a. Leaves finely dissected — *Achillea*
    b. Leaves entire to coarsely cut
      (1) Flowers yellow — *Senecio*
      (2) Flowers purple to white
        (a) Heads staminate and pistillate, on different plants, ray flowers lacking — *Antennaria*
        (b) Heads perfect, ray flowers present, ribbon-like — *Erigeron*

II. Flowers all ligulate or strap-shaped; sap milky — Sub-family *Liguliflorae* [*Cichoriaceae*]
  1. Leaves entire, long-pointed — *Agoseris*
  2. Leaves serrate or deeply cut
    a. Achene long-beaked — *Taraxacum*
    b. Achene beakless
      (1) Flowers bright yellow, pappus of numerous soft hairs — *Crepis*
      (2) Flowers orange, pappus a row of bristles surrounded by small scales — *Krigia*

PETASÍTES — SWEET COLTSFOOT

(Gr. *petasos*, a broad-brimmed hat, from the leaf)

Perennial herbs; heads in a corymb on a scaly scape appearing before the leaves; heads partially dioecious, the pistillate with several rows of whitish or purplish ray flowers and pistillate disk flowers; the staminate with fewer pistillate rays and sterile disk flowers; involucre green, nearly simple; receptacle flat, naked; pappus of abundant soft hairs.

1. Leaves deeply palmately lobed — *P. palmátus*
2. Leaves shallowly lobed or only toothed
  a. Leaves broadly cordate-deltoid to sub-orbicular, shallowly lobed — *P. trigonophýllus*
  b. Leaves deltoid-oblong to somewhat hastate, sinuate-dentate — *P. sagittátus*

TUSSILÁGO — COLTSFOOT

(L. *tussis*, cough)

Perennial herbs; heads solitary on a scaly scape, appearing before the leaves; flowers yellow, rays in several rows, pistillate; disk flowers perfect but with abortive pistils; involucre green, nearly simple; receptacle flat, naked; pappus of abundant soft hairs.

Head of yellow flowers on a scaly scape, leaves appearing later — *T. fárfara*

ACHILLÉA — YARROW

(Named for Achilles)

Perennial herbs with small heads in large corymbs; rays few, white or rarely pink, pistillate, and fertile; disk-flowers perfect; involucre of overlapping bracts with scarious margins; receptacle flat, chaffy; pappus none.

Aromatic herb with deeply dissected leaves — *A. millefólium*

SENÉCIO — GROUNDSELL, RAGWORT

(L. *senex*, old man)

The largest genus of flowering plants, ours all herbs with alternate leaves and yellow flowers; rays pistillate or none; disk-flowers perfect; involucre tubular or campanulate, green, nearly simple, but with a few short bracts at the base; receptacle flat, naked; pappus of abundant soft hairs. Pl. 15, fig. D.

1. Basal leaves oblong, 2.5–7.5 cm. long; stem woolly below; achene hispid — *S. balsámitae*
2. Basal leaves cordate or subcordate; plants mostly glabrous — *S. aúreus*
3. Stem leaves sinuate-dentate; swamp plants — *S. palústris*

ANTENNÁRIA — LADIES' TOBACCO

(L. *antenna,* sail-yard, feeler)

Low perennial herbs with entire leaves and mostly corymbose or racemose heads; flowers dioecious, tubular, the corollas mostly whitish; involucre of overlapping scarious bracts, white or colored, in the staminate heads having broad petal-like tips; receptacle convex or flat, naked; pappus of a single row of bristles, thicker in the staminate flowers. Pl. 15, fig. E.

1. Basal leaves 4.5–12 cm. long, strongly 3–5-nerved — *A. plantaginifólia*
2. Basal leaves 2–5 cm. long, mainly 1-nerved
   a. Basal leaves bright green above and glabrous or nearly so from the first — *A. canadénsis*
   b. Basal leaves dull above, tomentose or cobwebby, only the oldest leaves glabrous
      (1) Basal leaves apiculate; stolons leafy throughout — *A. neodioíca*
      (2) Basal leaves obtuse or acute; stolons leafy only at the ends — *A. neglécta*

PLATE 15: A, Adoxa moschatellina, 1, plant, 2, flower; B, Campanula rotundifolia; C, Valeriana edulis, 1, pistillate flowers, 2, single pistillate flower, 3, cluster of staminate flowers, 4, staminate flowers enlarged, 5, fruit; D, Senecio, 1, heads, 2 and 3, single flowers, 4, fruit; E, Antennaria neglecta, 1, staminate plant, 2, staminate flower, 3, pistillate plant, 4, single pistillate flower; F, Crepis runcinata, 1, flowering heads, 2, fruiting heads, 3, fruit.

ERÍGERON — DAISY

(Gr. *eri-,* very, *geron,* old man, from the hoary heads)

Herbs with entire or toothed leaves and corymbose or solitary heads; rays usually very numerous, narrow, purple, pink, or white, pistillate; disk flowers yellow, perfect; involucre green, its bracts narrow, in a single row; receptacle flat or convex, naked; pappus of a row of hair-like bristles with shorter ones intermixed or forming an outer row.

1. Stems simple; heads 2.5–4 cm. broad; rays about 50 — *E. pulchéllus*
2. Stem branched; heads 1–2.5 cm. broad; rays over 100 — *E. philadélphicus*

AGÓSERIS

(Gr. *agos,* chief, *seris,* succory)

[Nothocalais]

Perennial herbs with milky juice and long, linear, basal leaves; heads solitary on scapes; all the flowers strap-shaped and perfect, yellow; involucre bell-shaped, of several rows of loosely overlapping bracts; achene slender, not flattened, 10-ribbed, beaked or beakless; pappus of numerous, rather stiff hairs.

Achene beakless; leaves narrow, entire, sharp-pointed — *A. cuspidáta*

TARÁXACUM — DANDELION

(Gr. *tarasso,* to disturb)

Perennial herbs with milky juice and rosettes of deeply cut leaves; heads solitary on scapes; all the flowers strap-shaped and perfect; involucre double, consisting of an inner row of erect linear bracts with numerous much shorter, frequently reflexed, overlapping outer bracts; achene slender, not flattened, 4–5-ribbed, prickly above, very long-beaked; pappus of numerous soft hairs.

1. Achene gray-green; involucral scales reflexed; leaves coarsely dentate — *T. officinále*
2. Achene red-brown; involucral scales spreading; leaves deeply runcinate-pinnatifid — *T. erythrospérmum*

CRÉPIS — HAWKSBEARD

(Gr. *krepis,* boot, base, perhaps from the basal rosette)

Annual or biennial milky herbs; heads solitary or in inflorescences; all the flowers strap-shaped and perfect; involucre of a single row of bracts; achene short, not flattened nor beaked; pappus of numerous, soft white hairs. Pl. 15, fig. F.

Stem nearly leafless, branched; heads several, yellow — *C. runcináta*

KRÍGIA

(Named for the botanist Krieg)

[Adopogon]

Annual or perennial milky herbs with mostly basal leaves; heads usually in loose inflorescences; flowers all strap-shaped and perfect, yellow or orange; involucre of about 2 rows of overlapping thin bracts with papery margins; achene not flattened, short, truncate; pappus of 5–20 bristles with 5–15 outer scales.

Stem leaves 1–3, clasping; heads 2–6 — *K. amplexicaúlis*

CLASS MONOCOTYLEDONS

Alismales Arrowhead Order

Juncaginàceae — Arrow Grass Family

Marsh plants with narrow bladeless leaves; flowers in racemes or dense spikes; sepals 3; petals 3; stamens 6; ovary 3- or 6-celled, more or less syncarpous, becoming apocarpous in fruit; flower apopetalous, hypogynous, regular.

TRIGLÓCHIN — ARROW GRASS

(Gr. *tri-,* three, *glochin,* point)

Marsh herbs with sheathing rush-like basal leaves; sepals and petals greenish, concave, early deciduous; carpels united until maturity, then separating from a rod-like central axis as achene-like bodies.

Leaves rush-like, fleshy; flowers greenish in dense spike — *T. marítima*

Arales Arum Order

Aráceae — Arum Family

Herbs with flowers in a spike, which is subtended or surounded by a spathe; sepals 4–6 or 0; petals 0; stamens 4–7; ovary 1-celled; flower syncarpous, apetalous.

1. Sepals present
   - a. Spadix with a leaf-like spathe, i.e., naked; leaves grass-like — *Acorus*
   - b. Spadix covered by a hood-like spathe; leaves broad — *Symplocarpus*
2. Sepals absent
   - a. Flowers perfect; leaves simple — *Calla*
   - b. Flowers staminate and pistillate; leaves compound — *Arisaema*

ÁCORUS — SWEET FLAG

(Gr. *akoros,* sweet flag)

An aromatic herb with sword-shaped leaves and the spadix borne on a triangular scape, subtended but not covered by a leaf-like spathe; flowers perfect; sepals 6; stamens 6; ovary 2–3-celled. Pl. 16, fig. A. A single species, *A. Cálamus.*

SYMPLOCÁRPUS — SKUNK CABBAGE

(Gr. *symploke,* connection, *karpos,* fruit)

[Spathyema]

An ill-smelling herb with broad ovate, net-veined, basal leaves; spadix covered with flowers, almost spherical, surrounded by the hood-shaped, reddish brown fleshy spathe; flowers perfect; sepals 4; stamens 4; ovary 1-celled, 1-seeded; fruit multiple. Pl. 16, fig. B. A single species, *S. foétidus.*

CÁLLA — WATER ARUM

(L. *calla,* name of a plant)

A swamp herb with long-petioled, heart-shaped, basal leaves; spadix covered with flowers, subtended by a heart-shaped white spathe; flowers perfect or the upper staminate; sepals wanting; stamens 6; ovary 1-celled; fruit a cluster of few-seeded red berries. Pl. 16, fig. C. A single species, *C. palústris.*

PLATE 16: A, Acorus Calamus; B, Symplocarpus foetidus, 1, spathe, 2, spadix, 3, flower; C, Calla palustris; D, Arisaema dracontium; E, Arisaema triphyllum, 1, spathe, 2, spadix, 3, pistillate flower, 4, staminate flower.

ARISAÉMA — JACK-IN-THE-PULPIT, DRAGON ROOT

(Gr. *arisaron,* arum, *haema,* blood)

Herbs with 1–2 large compound leaves and a terminal inflorescence; spadix elongated, with flowers only upon the basal portion, which is closely surrounded by the hood-like brown or green spathe; flowers dioecious or monoecious, naked, the staminate consisting of a cluster of anthers, the pistillate consisting of a 1-celled pistil; fruit a cluster of 1–few-seeded berries. Pl. 16, figs. D and E.

1. Leaves with 3 leaflets; spadix covered by spathe — *A. triphýllum*
2. Leaves with 5–17 leaflets; spadix exserted beyond the spathe — *A. dracóntium*

Xyridales Xyris Order

Commelináceae — Spiderwort Family

Grass-like herbs with fleshy leaves and mucilaginous sap; sepals 3; petals 3; stamens 6; ovary 3-celled; flower syncarpous, apopetalous, hypogynous, regular or irregular.

Sepals green, petals colored — *Tradescantia*

TRADESCÁNTIA — SPIDERWORT

(Named for Tradescant)

Herbs (ours with grass-like leaves); flowers clustered, perfect, regular, quickly withering; sepals green; petals unsubstantial, blue or purplish, rarely white; stamens 6, the filaments hairy; ovary 2–3-celled; fruit a few-seeded capsule.

1. Sepals and pedicels smooth — *T. reflexa*
2. Sepals glandular-pubescent — *T. bracteáta*

Graminales Grass Order

Gramíneae — Grass Family

[Poaceae]

Perennial herbs with narrow sheathing leaves; stems round with nodes and internodes; flowers in spikelets; sepals 0; petals 0; stamens 2 or 3; flower naked, between two scales, hypogynous. The genera of grasses are distinguished largely by the structure of the spikelets. The typical grass spikelet consists of an axis bearing 2-ranked bracts. The first 2 bracts, the empty *glumes,* have

nothing in their axils. Above these there are 1–many *lemmas,* each with a flower in its axil. Between the flower and the axis is a bractlet or *palea,* so that the flower is enclosed between its lemma and its palea. The whole structure — lemma, palea, and flower — is often spoken of as a *floret.*

I. Spikelets in a panicle (sometimes contracted and spike-like in appearance but not with a flattened, jointed rachis)
  1. Spikelet with but 1 perfect flower (rarely 1–2 extra staminate flowers)
    a. Pedicel of spikelet jointed below the glumes, the whole spikelet falling when ripe
      (1) Spikelet not flattened; glumes apparently 3; inflorescence a normal panicle — *Panicum*
      (2) Spikelet flattened; glumes 2; inflorescence very contracted and spike-like — *Alopecurus*
    b. Axis of spikelet jointed between the glumes and the lemma, the floret falling out from between the glumes when ripe
      (1) Lemma with a more or less elongated awn
        (a) Awn not sharply bent nor twisted — *Oryzopsis*
        (b) Awn sharply bent in the middle, the lower half twisted — *Stipa*
      (2) Lemma awnless
        (a) Spikelet 1-flowered
          x. Glumes rounded; floret without appendages at base — *Milium*
          y. Glumes boat-shaped, keeled; floret with 2 small hairy appendages at base — *Phalaris*
        (b) Spikelet 3-flowered, the 2 lower staminate; glumes papery — *Hierochloe*
  2. Spikelet with 2–many perfect flowers
    a. Glumes longer than the 1–3-nerved lemmas
      (1) Second glume wider than the lemmas; axis of spikelet jointed below the glumes — *Sphenopholis*
      (2) Second glume not wider than the lemmas; axis of spikelet jointed above the glumes — *Koelèria*
    b. Glumes shorter than the 5–many-nerved lemmas
      (1) Lemma keeled, often webby at the base — *Poa*
      (2) Lemma rounded at the back, not webby at the base
        (a) Lemmas pointed; stigmas at the summit of the ovary — *Festuca*
        (b) Lemmas 2-toothed at the apex; stigmas below the summit of the ovary — *Bromus*

II. Spikelets in a spike with a flattened, jointed rachis, 1–3 spikelets at each joint
  1. Spikelets all similar and seed-bearing; 2–4 flowered
    a. Glumes boat-shaped; spikelets 1 at each joint of the rachis — *Secale*
    b. Glumes reduced to short bristles; spikelets 2 at each joint of the rachis — *Asperella*
  2. Spikelets 3 at each joint of the rachis; the central one sessile, fertile; the lateral ones stalked, usually abortive; fertile spikelets 1-flowered — *Hordeum*

PÁNICUM — PANIC GRASS

(L. *panicum,* panic grass)

Annual or perennial grasses often with rather broad leaves; spikelets not flattened, borne in panicles, the pedicels jointed just below the spikelets; glumes apparently 3, membranaceous, the first shorter than the others, the third sometimes bearing a staminate flower; lemma and palea hard, usually shining, tightly enclosing the grain. Pl. 17, fig. A. Many species of great technical difficulty; ripe fruit is necessary to identify them.

ALOPECÚRUS — FOXTAIL GRASS

(Classical L. name of this grass)

Branching perennial grasses with flat leaves; spikelets flattened, 1-flowered, borne in a dense spike-like panicle, their pedicels about 1 mm. long, jointed just below the glumes; glumes flattened, ciliate on the keel; lemma blunt, awned on the back; palea none. Pl. 17, fig. C.

Spikelets about 5 mm. long; awn exserted about 5 mm. — *A. praténsis*

ORYZÓPSIS — MOUNTAIN RICE

(Gr. *oryza,* rice, *opsis,* look)

Tufted perennial grasses; spikelets in narrow panicles, 1-flowered; glumes rather broad, awnless; lemma firm, indurated and sometimes black in fruit, rounded, bearing a terminal nearly straight awn; palea large. Pl. 17, fig. B.

1. Spikelets 3–4 mm. long; awn 1–4 mm. long; leaves involute filiform *O. púngens*
2. Spikelets 6–8 mm. long; awn 5–10 mm. long; leaves nearly flat *O. asperifólia*

STÍPA — PORCUPINE GRASS

(L. *stipa,* tow)

Coarse perennial grasses with inrolled leaves; spikelets in a panicle, 1-flowered; glumes narrow, acute or bristle-pointed; lemma firm, inrolled, bearing at its summit an awn which is sharply bent in the middle and twisted below; palea small. The part of the axis between the glumes and the lemma (callus) is bearded and in the mature grain is often needle-sharp. Pl. 17, fig. D.

Glumes 2.8–3.5 cm. long; lemma about one-half as long; awn 11–20 cm. long *S. spártea*

PLATE 17: A, Panicum, 1, part of panicle, 2, spikelet; B, Oryzopsis asperifolia, 1, raceme, 2, spikelet; C, Alopecurus pratensis, 1, spike, 2, spikelet; D, Stipa spartea, 1, spikelets, 2, grain; E, Phalaris arundinacea, 1, part of panicle, 2, spikelet; F, Hierochloe odorata, 1, panicle, 2, spikelet; G, Milium effusum, 1, part of panicle, 2, spikelet; H, Spenopholis obtusata, 1, panicle, 2, spikelet; I, Koeleria cristata, 1, panicle, 2, spikelet; J, Poa pratensis, 1, part of panicle, 2, spikelet; K, Festuca octoflora, 1, spike, 2, spikelet; L, Bromus; M, Asperella Hystrix, 1, spike, 2, spikelet.

MÍLIUM — TALL MILLET GRASS

(L. *milium,* millet)

Grasses with flat leaves; spikelets in panicles, 1-flowered; glumes alike, nearly flat; lemma awnless, shorter than the glumes, firm and shining, the edges inrolled; palea similar. Pl. 17, fig. G.

One species in our flora, *M. effúsum.*

PHÁLARIS — REED CANARY GRASS, RIBBON GRASS

(Gr. *phalaris,* a kind of grass)

Grasses with flat ribbon-like leaves and dense panicles of flattened 1-flowered spikelets; glumes boat-shaped, more or less winged along the keel; floret preceded by 2 small sterile lemmas; fertile lemma awnless, indurated, shining; palea resembling the lemma. Pl. 17, fig. E.

Sterile lemmas very small, hairy; leaves 6–10 mm. wide, sometimes striped with white *P. arundinácea*

HIERÓCHLOE — SENECA GRASS

(Gr. *hieros,* sacred, *chloe,* grass)

[Savastana]

Fragrant perennial grasses; spikelets in panicles, 3-flowered, the two lower flowers staminate, the third perfect with 2 stamens; glumes boat-shaped, shining, papery; lemmas of staminate flowers about as long as the glumes; lemma of perfect flower shorter, all firm, boat-shaped, hairy, awnless; paleas hyaline, 1–2-nerved. Pl. 17, fig. F. One species in our flora, *H. odoráta.*

SPHENÓPHOLIS

(Gr. *sphen,* a wedge, *pholis,* a scale)
[Eatonia]

Perennial grasses usually with flat leaves; spikelets in panicles, 2–3 flowered; first glume narrow, second glume broader, 3-nerved; lemmas obscurely nerved, unawned or awned on the back, smaller than the glumes; palea hyaline; axis of the spikelet jointed below the glumes and between the florets, and prolonged beyond the uppermost floret. Pl. 17, fig. H.

Second glume as broad as long; spikelets crowded in a narrow panicle — *S. obtusáta*

KOELÉRIA

(Named for the botanist Koeler)

Tufted perennial grasses with spike-like panicles; spikelets 2–4 flowered; glumes unequal, first glume 1-nerved, second glume 3-nerved; lemmas with papery margins, shorter than the glumes, faintly nerved, sharp-pointed, unawned; palea hyaline; axis of spikelet extended beyond the uppermost flower. Pl. 17, fig. I. Only one species in our flora, *K. cristáta.*

PÓA — MEADOW GRASS

(Gr. *poa,* grass)

Annual and perennial grasses with flat narrow leaves; spikelets in panicles, flattened, 2–6 flowered; glumes 1–3 nerved, keeled, awnless; lemmas longer than the glumes, 3–5 nerved, keeled, awnless, often cobwebby at the base; palea 2-toothed; axis of the spikelet not extended beyond the uppermost (usually rudimentary) floret. Pl. 17, fig. J.

1. Pedicels shorter than the spikelets
   a. Flowers cobwebby at base — *P. praténsis*
   b. Flowers not cobwebby at base — *P. ánnua*
2. Pedicels longer than the spikelets — *P. Wólfii*

FESTÚCA — FESCUE GRASS

(L. *festuca,* straw)

Annual and perennial grasses with flat or inrolled leaves; spikelets in panicles, 2–many flowered; glumes unequal, shorter than the lemmas, pointed, first glume 1-nerved, second glume 3-nerved; lemmas convex, entire, and usually short-awned at the summit; palea about the length of the lemma; stigmas at the summit of the ovary. Pl. 17, fig. K.

1. Annuals; awn about as long as lemma — *F. octoflóra*
2. Perennials
   a. Leaves rolled; lemmas awn-pointed — *F. ovína*
   b. Leaves flat; lemmas obtuse — *F. nútans*

BRÓMUS — BROME GRASS

(Gr. *bromos,* oats)

Annual, biennial, and perennial grasses with flat leaves; spikelets in panicles, 3–many flowered; glumes unequal, shorter than the lemmas, pointed, 1–5-nerved; lemmas mostly convex, 2-toothed at the summit, often awned between the teeth; palea 2-keeled, adhering to the grain; stigmas below the summit of the ovary. Pl. 17, fig. L.

1. Awns longer than the lemmas — *B. tectórum*
2. Awns very short or lacking — *B. inérmis*

SECÁLE — RYE

(L. *secale,* rye)

Annual and perennial grasses with flat leaves; spikelets in cylindrical spikes, 1 at each joint of the flattened rachis, mostly 2-flowered; glumes narrowly boat-shaped, sharp-pointed, shorter than the lemmas; lemmas keeled, unsymmetrical, strongly nerved, the nerves converging into the (usually) long straight awn; keel and outside edge of lemma with a comb of rigid sharp teeth; palea sharply 2-keeled, the sides hyaline, the middle part firmer; axis of the spikelet extending above the upper floret. A commonly planted grain, **S. cereále.*

ASPERÉLLA — BOTTLE-BRUSH GRASS

(L. *asper,* rough)

[Hystrix]

Perennial grasses with flat leaves; spikelets in spikes, 1–3 at each joint of the flattened rachis, 2–4 flowered; glumes reduced to short bristles or wanting; lemmas convex, rigid, pointed and long-awned at the summit; palea 2-keeled; grain free. Pl. 17, fig. M. One species in our flora, *A. Hýstrix.*

HÓRDEUM — BARLEY

(L. *hordeum,* barley)

Annual, biennial, and perennial grasses; spikelets in spikes, which fall apart at maturity, usually with 3 spikelets at each joint of the zig-zag flattened rachis, the middle spikelet sessile, 1-flowered, the lateral ones short-stalked, usually abortive, awned (all 3 fertile in some races of cultivated barley); glumes of the fertile spikelet narrow, awned, or reduced to long awns; lemma 5-nerved, awned; palea 2-nerved; axis of the spikelet prolonged into an awn; grain usually adhering to the palea.

1. Awns 8–15 mm. long; spike erect, native — *H. pusíllum*
2. Awns much longer
   - a. Awns very slender; spike nodding; native weed — *H. jubátum*
   - b. Awns stout; spike nearly erect; cultivated grain — **H. vulgáre*

Cyperáceae — Sedge Family

Grass- or rush-like herbs; leaves with closed sheaths and narrow blades or blades sometimes lacking; stems solid, often triangular; flowers in spikelets, either solitary or clustered; sepals 0; petals 0; stamens 1–3; ovary 1-celled; flower in the axil of a scale, naked or with hairs, bristles or a perigynium, hypogynous.

I. Flowers perfect; pistil surrounded by bristles or hairs
   1. Base of the style swollen, persistent — *Eleocharis*
   2. Base of the style not swollen, deciduous
      - a. Pistil surrounded by 1–6 bristles — *Scirpus*
      - b. Pistil surrounded by 6–many smooth hairs — *Eriophorum*

II. Flowers staminate and pistillate, pistillate one surrounded by a perigynium — *Carex*

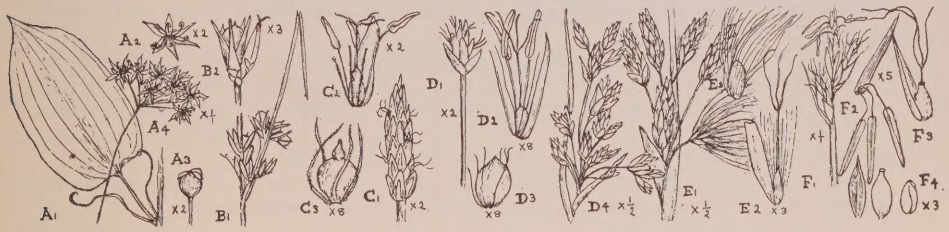


PLATE 18: A, Smilax herbacea, 1, leaf, 2, staminate flower, 3, pistillate flower, 4, inflorescence; B, Juncus tenuis, 1, inflorescence, 2, flower; C, Eleocharis palustris, 1, spike, 2, flower, 3, fruit; D, Scirpus, 1, S. pauciflorus spike, 2, flower; 3, fruit, 4, S. validus, inflorescence; E, Eriophorum angustifolium, 1, inflorescence, 2, flower, 3, fruit; F, Carex pennsylvanica, 1, inflorescence, 2, staminate flower, 3, pistillate flower, 4, fruiting scale, perigynium, and achene.

ELEÓCHARIS — SPIKE RUSH

(Gr. *helos,* marsh, *charis,* grace)

Rush-like plants mostly without leaves but with green cylindrical or triangular culms each bearing a single terminal spike; flowers perfect; perianth of 3–6 bristles; stamens 2–3; style 2–3-cleft with a swollen persistent base, which forms a tubercle on the achene. Pl. 18, fig. C.

Style 2-cleft; perennial with creeping rootstock. — *E. palústris*

SCÍRPUS — CLUBRUSH, BULRUSH

(L. *scirpus,* rush)

Rush-like or grass-like plants with culms bearing 1–many spikelets often in a large involucrate inflorescence; flowers perfect; perianth of 1–6 bristles; stamens 2–3; style 2–3-cleft, not swollen at the base; achene not tuberculate. Pl. 18, fig. D.

1. Spikelet solitary and terminal; involucral leaf or bract lacking — *S. Clintónii*
2. Spikelets more than one, appearing terminal or lateral; involucral leaf 1
   a. Culm sharply 3-angled; spikelets 2–several; involucral leaf long — *S. americánus*
   b. Culm round, tall; spikelets many; involucral leaf short, appearing like the tip of the stem — *S. válidus*
3. Spikelets several; involucral leaves 2; stem stout, triangular — *S. fluviátilis*

ERIÓPHORUM — COTTON GRASS

(Gr. *erion,* wool, *phora,* bearing)

Rush-like or grass-like herbs with culms bearing 1–several terminal spikelets with or without an involucre; flowers perfect; perianth of numerous smooth hairs becoming very long in fruit; stamens 1–3; style elongated, not thickened at the base; achene sharply triangular, not tuberculate. Pl. 18, fig. E.

1. Spikelets solitary — *E. cállitrix*
2. Spikelets in a cluster
   a. Spikelets in an umbel, hairs white
      (1) Flowering stems less than 1 mm. thick at the top; basal leaves wanting — *E. grácile*
      (2) Flowering stems 1-2 mm. thick at the top; basal leaves present, flat
         (a) Leaf-sheaths green, scales of inflorescence with a strong midrib to the tip — *E. víridi-carinátum*
         (b) Leaf-sheaths with a dark top, scales of inflorescence with a papery, nerveless tip — *E. angustifólium*
   b. Spikelets in a head, hairs brown — *E. virgínicum*

CÁREX — SEDGE

(L. *carex,* sedge)

Grassy herbs with mostly triangular solid culms and 3-ranked leaves; flowers in spikes, monoecious (rarely dioecious); staminate flowers consisting of 2–3 stamens in the axil of a scale-like bract; pistillate flowers consisting of a pistil with a 2–3-cleft style, the ovary surrounded by a sac-like perigynium borne in the axil of a bract; fruit an achene, surrounded by the matured perigynium. Pl. 18, fig. F.

A large genus, several species of which begin to blossom before June 1. Ripe fruit is necessary for the determination of the species. *C. pubéscens, C. laxiflóra,* and *C. longiróstris* bloom in May and occasionally ripen fruit by the end of the month; the following species bloom in April and early May.

1. Spikes axillary, nearly or quite sessile; perigynia globose or oval, hairy, with beak ⅛ to ¾ the length of the perigynium — *C. pennsylvánica*
2. Spikes long-stalked, some of them basal; perigynia 3-cornered, obovate, nearly smooth, with very short beak — *C. pedunculáta*

Liliales Lily Order

Liliáceae — Lily Family

(Including the Melanthaceae and Convallariaceae)

Herbaceous plants, with scapes or leafy stems growing from bulbs, corms, or rootstocks; sepals 3; petals 3; stamens 6; ovary 3-celled (rarely, sepals 2; petals 2; stamens 4; ovary 2-celled); flower syncarpous, apopetalous or sometimes sympetalous, hypogynous, regular.

I. Sepals green; petals colored; leaves in a whorl of 3, broad — *Trillium*

II. Sepals colored like the petals
   1. True leaves reduced to scales, bearing fascicles of thread-like false leaves in their axils — *Asparagus*

2. Leaves of ordinary type
   a. Native plants
      (1) Flowers in a cluster at the top of a leafless stem, i.e., a scape
         (a) Plant bulbous with a strong onion-like odor — *Allium*
         (b) Plant with a rootstock, nearly odorless — *Clintonia*
      (2) Flowers borne on a leafy stem
         (a) Flowers or flower clusters borne at the nodes
            x. Flowers mostly in clusters of 2–6, borne in the axils of the leaves; sepals and petals united — *Polygonatum*
            y. Flowers solitary or in pairs, borne beside the leaves; sepals and petals free — *Streptopus*
         (b) Flowers or flower clusters terminal
            x. Flowers single or few
               (x) Stem unbranched, leaves 2 — *Erythronium*
               (y) Stem branched, leaves numerous — *Uvularia*
            y. Flowers numerous in a raceme or panicle
               (x) Petals with a gland at the base; plant bulbous — *Zygadenus*
               (y) Petals without glands; stem arising from a rootstock
                  m. Sepals 3; petals 3 — *Smilacina*
                  n. Sepals 2; petals 2 — *Maianthemum*
   b. Cultivated plants
      (1) Flowers on leafless stems; leaves all basal
         (a) Sepals and petals free, some of the flowers often solitary, others in racemes — *Scilla*
         (b) Sepals and petals united at the base; flowers clustered
            x. Flowers small (less than 2.5 cm. long), lasting for several days
               (x) Flowers wheel-shaped, free part of sepals and petals longer than the united bases — *Chionodoxa*
               (y) Free part of sepals and petals shorter than the united bases
                  m. Flowers globular — *Muscari*
                  n. Flowers bell-shaped
                     (m) Leaves linear; plant bulbous — *Hyacinthus*
                     (n) Leaves ovate-lanceolate; plant with a rootstock — *Convallaria*
            y. Flowers large (6–10 cm. long), trumpet-shaped, lasting but one day — *Hemerocallis*
      (2) Flowers large (over 2.5 cm. long), borne at the top of leaf-bearing stems
         (a) Flower erect, solitary; stem leaves few — *Tulipa*
         (b) Flower nodding, solitary or clustered; stem leaves several to many — *Fritillaria*

ASPÁRAGUS — ASPARAGUS

(The classical L. name)

Branching perennial herbs with scale-like true leaves and thread-like or flat false leaves in their axils; flowers in the axils of the true leaves, small, on slender jointed pedicels, perfect or dioecious through the partial abortion of the stamens or pistils; sepals and petals nearly or quite free; style 1 (wanting in staminate flowers); stigma 3-lobed; fruit a 1–few-seeded berry.

False leaves thread-like; flowers bell-shaped, greenish-yellow — *A. officinális*

TRÍLLIUM — WAKE-ROBIN

(Of uncertain origin, but probably from Gr. *tri-*, three)

Erect herbs bearing a single whorl of 3 net-veined leaves and a solitary terminal sessile or peduncled flower; sepals 3, green; petals 3, white, pinkish, or purple-brown; stamens 6; styles 3; fruit a berry. Pl. 19, fig. A.

1. Leaves oval or ovate, obtuse, 2.5–5 cm. long; flowers in April — *T. nivále*
2. Leaves broadly ovate or rhombic, acuminate, 5–17 cm. long; flowers mostly in May
   a. Petals very large, 3.5–6 cm. long, more or less erect — *T. grandiflórum*
   b. Petals 1.5–3.5 cm. long, spreading or strongly recurved
      (1) Peduncle of the flower 3–10 cm. long, erect or declined, petals spreading — *T. declinátum*
      (2) Peduncle of the flower 3 cm. long or less, recurved beneath the leaves, petals recurved — *T. cérnuum*

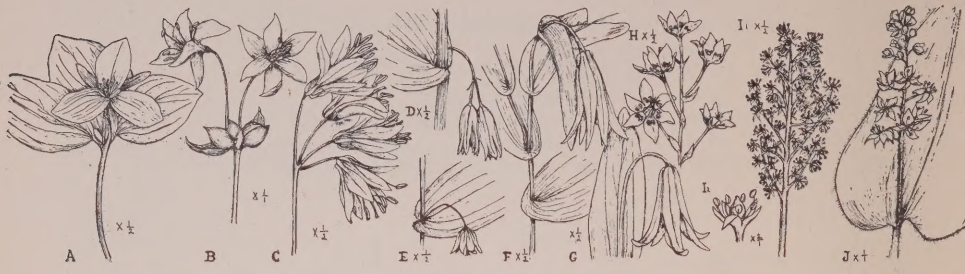


PLATE 19: A, Trillium nivale; B, Allium canadense; C, Clintonia borealis; D, Polygonatum biflorum; E, Streptopus longipes; F, Uvularia grandiflora; G, Erythronium albidum; H, Zygadenus chloranthus; I, Smilacina racemosa, 1, inflorescence, 2, flower; J, Maianthemum canadense.

ÁLLIUM — ONION

(L. *allium*, garlic)

Bulbous strong-smelling herbs with flowers in bracted umbellate clusters borne on scapes, often with bulblets replacing some or all of the flowers; flowers pink or greenish-white; sepals and petals not united; style 1; stigma scarcely lobed; fruit a loculicidal capsule. Pl. 19, fig. B.

1. Leaves ovate-lanceolate, in earliest spring, withering before the flowers appear — *A. tricóccum*
2. Leaves linear, present during flowering
   a. Flowers mostly replaced by bulblets; fruit not crested — *A. canadénse*
   b. Flowers rarely replaced by bulblets; fruit crested — *A. reticulátum*

CLINTÓNIA

(Named for DeWitt Clinton)

Rhizomatous herbs with broad basal leaves surrounding a scape, which bears a more or less umbellate cluster of bell-shaped flowers; bracts inconspicuous or wanting; sepals and petals free, deciduous; style single; stigma scarcely lobed; fruit a blue or black berry. Pl. 19, fig. C. Only one species in our flora, *C. boreális*.

POLYGONÁTUM — SOLOMON'S SEAL

(Gr. *polygonaton*, knotgrass)

Leafy herbs with axillary clusters of tubular flowers; sepals and petals united; style single; stigma obscurely 3-lobed; fruit a blue or black berry. Pl. 19, fig. D.

1. Leaves pubescent beneath; filaments slender, rough — *P. biflórum*
2. Leaves glabrous; filaments smooth and flattened — *P. commutátum*

STRÉPTOPUS — TWISTED-STALK

(Gr. *streptos*, twisted, *pous*, foot)

Leafy herbs with solitary or paired bell-shaped flowers borne alongside the leaves; sepals and petals free; style single; stigma entire to 3-cleft; fruit a red or orange berry. Pl. 19, fig. E.

1. Leaves smooth, strongly clasping; pedicels of flowers abruptly bent in the middle — *S. amplexifólius*
2. Leaves hispid along the margin, slightly clasping; pedicels of flowers slightly bent — *S. lóngipes*

ERYTHRÓNIUM — ADDER'S-TONGUE, DOG'S-TOOTH VIOLET

(Gr. *erythronion,* a plant with red)

Bulbous herbs producing a single leaf, or in flowering plants a pair of basal leaves with a naked peduncle between them, which bears one drooping bell-shaped flower (rarely several flowers); sepals and petals separate; style single; stigmas 3 or 1 (3-lobed); fruit a loculicidal capsule. Pl. 19, fig. G.

1. Stem with a fleshy offshoot below the leaves; flower rose-colored — *E. propúllans*
2. Stem without a fleshy offshoot
   a. Flower yellow; stigmas very short — *E. americánum*
   b. Flower white or tinted with purple; stigmas recurved — *E. álbidum*

UVULÁRIA — BELLWORT

(L. *uva,* the soft palate)

Leafy-branched herbs with drooping, terminal, solitary, narrow, bell-shaped flowers; sepals and petals free; style 3-cleft to below the middle; fruit a triangular loculicidal capsule, often 3-winged. Pl. 19, fig. F.

1. Leaves perfoliate; flowers lemon-yellow — *U. grandiflóra*
2. Leaves sessile; flowers greenish-yellow — *U. sessilifólia*

ZYGÁDENUS — ZYGADENUS

(Gr. *zygon,* yoke, *aden,* gland)

Poisonous, frequently bulbous herbs with panicled flowers and linear leaves; flowers greenish-white, wheel-shaped; sepals and petals glandular within, withering persistent; ovary sometimes partially inferior; styles 3; fruit a septicidal capsule. Pl. 19, fig. H. Only one species in our flora, *Z. chloránthus.*

SMILACÍNA — FALSE SOLOMON'S SEAL

(Diminutive of Smilax)

[Vagnera]

Unbranched rhizomatous herbs bearing a raceme or panicle of small white flowers at the summit of a leafy stem; flowers star-shaped; perianth segments 6, free, withering persistent; stamens 6; style single; stigma obscurely 3-lobed; fruit a red berry. Pl. 19, fig. I.

1. Leaves numerous
   a. Flowers numerous, panicled — *S. racemósa*
   b. Flowers few to several, racemose — *S. stellàta*
2. Leaves 2–4; flowers few to several — *S. trifoliàta*

MAIÁNTHEMUM — FALSE LILY-OF-THE-VALLEY

(L. *Maius,* May, Gr. *anthemon,* a flower)

[Unifolium]

Rhizomatous berbs with solitary basal leaves, or in flowering plants a stem bearing two (rarely 1–3) ovate leaves and a terminal raceme of small, fragrant star-shaped flowers; perianth segments 4, free, recurved; stamens 4; ovary 2-celled; style 1; stigma 2-cleft; fruit a red berry (speckled when unripe). Pl. 19, fig. J. Only one species in our flora, *M. canadénse.*

SCÍLLA — SQUILL

(L. *scilla,* squill)

Bulbous herbs with basal linear leaves and racemed, wheel-shaped, blue or white flowers; sepals and petals free; style 1; stigma unlobed; fruit a loculicidal capsule. Pl. 20, fig. A.

1. Flowers bell-shaped, raceme long-stalked
   a. Pedicels about 1 cm. long — **S. festális*
   b. Pedicels about 3 cm. long — **S. hispánica*
2. Flowers nearly flat, raceme few-flowered and with solitary basal flowers — **S. sibírica*

CHIONODÓXA — GLORY-OF-THE-SNOW

(Gr. *chion,* snow, *doxa,* glory)

Bulbous herbs with basal linear leaves and racemed, wheel-shaped blue or white flowers; sepals and petals united at the base into a short bell-shaped tube; style 1; stigma unlobed; fruit a capsule. Pl. 20, fig. B.

Flowers in loose racemes, blue with a white edge — **C. Lucíliae*

MUSCÁRI — GRAPE HYACINTH

(Named for the musky odor of some species)

Bulbous herbs with basal linear leaves and a spike-like raceme of small, almost spherical, blue or white flowers; sepals and petals almost completely united; style 1; stigma entire; fruit a loculicidal capsule. Pl. 20, fig. C.

Bulbous plant with small blue globular flowers — **M. botryoides*

HYACÍNTHUS — HYACINTH

(Gr. *hyakinthos*, a youth from whose blood sprang this flower)

Bulbous herbs with basal linear leaves and a raceme of bell-shaped fragrant flowers; sepals and petals united into a tube for over half their length; stamens borne on the perianth tube, included; style short; stigma scarcely lobed; fruit a loculicidal capsule. Pl. 20, fig. D. Flowers purple, pink, white, or pale yellow. **H. orientális.*

PLATE 20: A, Scilla sibirica; B, Chionodoxa Luciliae; C, Muscari botryoides, 1, flower, 2, inflorescence; D, Hyacinthus orientalis, 1, inflorescence, 2, flower; E, Convallaria majalis; F, Hemerocallis flava; G, Tulipa Gesneriana; H, Fritillaria meleagris.

CONVALLÁRIA — LILY-OF-THE-VALLEY

(L. *convallis*, a closed valley)

Rhizomatous herbs with two basal ovate leaves and a naked raceme of white, bell-shaped, fragrant flowers; sepals and petals united almost to the top; style 1; fruit a scarlet berry. Pl. 20, fig. E. The commonly cultivated species, **C. majális.*

HEMEROCÁLLIS — YELLOW DAY LILY, LEMON LILY

(G. *hemera*, day, *kallis*, beauty)

Herbs with 2-ranked linear leaves and tall scapes bearing several short-lived large yellow or orange flowers; sepals and petals united below into a funnel-shaped tube; style thread-like, curved; stigma 1; fruit a loculicidal capsule. Pl. 20, fig. F.

1. Flower orange, margin of petals membranous and wavy — **H. Dumóntii*
2. Flower yellow, margin of petals smooth — **H. fláva*

TÚLIPA — TULIP

(Name probably Turkish)

Bulbous plants with erect stems bearing 2–3 ovate leaves and (usually) a single large, terminal, erect flower; sepals and petals free; stigma sessile, 3-lobed; fruit a loculicidal capsule. Pl. 20, fig. G. Most of the garden tulips are considered to be forms of the following species:

1. Pubescent; flowering in April and May — **T. suavéolens*
2. Smooth; flowering in late May — **T. Gesneriána*

FRITILLÁRIA — FRITILLARY, CROWN IMPERIAL

(L. *fritillus,* a dice box)

Bulbous plants with erect leafy stems and either solitary or clustered flowers; flowers bell-shaped; sepals and petals free, bearing round honey-glands on their inner face; style 1; stigma 3-lobed; fruit a loculicidal capsule. Pl. 20, fig. H.

1. Flower solitary; petals and sepals marked like a checker-board — **F. meleágris*
2. Flowers clustered, bad smelling; petals and sepals red or orange — **F. imperiális*

Smilacáceae — Smilax Family

Plants with woody or herbaceous stems, mostly vines, often prickly; leaves broad, net-veined; sepals 3; petals 3; stamens 6; ovary 3-celled; flower syncarpous, apopetalous, hypogynous, regular, dioecious.

SMÍLAX — GREENBRIER

(Gr. *smilax,* bindweed)

Woody or berbaceous tendril-bearing vines with broad net-veined leaves; flowers small, umbellate on axillary peduncles, dioecious, often ill-smelling; sepals and petals greenish or yellowish, free, deciduous; stigmas 3, almost sessile; fruit a blue or black berry. Pl. 18, fig. A.

1. Stems annual, herbaceous, without prickles — *S. herbácea*
2. Stems perennial, woody, generally with prickles — *S. híspida*

Juncáceae — Rush Family

Grass-like, more or less tufted herbs with small brownish green or brown flowers; sepals 3; petals 3; stamens 6; ovary 3-celled or 1-celled; flower syncarpous, apopetalous, hypogynous, regular.

1. Leaves grass-like, sheaths closed; capsule 3-seeded — *Luzula*
2. Leaves rounded, sheaths open; capsule many-seeded — *Juncus*

LÚZULA — WOOD RUSH

(From Ital. *luciola,* glowworm)

[Juncoides]

Grass-like perennial herbs, often hairy; leaves flat with closed sheathes; flowers in compound inflorescences, sometimes densely clustered; ovary 1-celled with 3 parietal placentae; fruit a 3-seeded capsule.

1. Inflorescence umbellate, 1 or 2 flowers on each of its branches — *L. saltuénsis*
2. Inflorescence of 2–12 spike-like or capitate clusters — *L. campéstris*

JÚNCUS — RUSH

(L. *juncus,* rush)

Grass-like or rush-like perennial smooth herbs; leaves round or flat with open sheathes; flowers in compound inflorescences, sometimes densely clustered; ovary 3-celled (sometimes incompletely so); fruit a capsule with numerous small seeds. Pl. 18, fig. B.

1. Leaves without blades, scale-like sheaths at the base of the stem; inflorescence appearing lateral — *J. effúsus*
2. Leaves with blades; inflorescence appearing terminal, subtended by a narrow leaf — *J. ténuis*

Amaryllidáceae — Amaryllis Family

Herbaceous plants, usually with scapes or leafy stems from bulbs, corms, or rootstocks; sepals 3; petals 3; stamens 6; pistil 1; ovary 3-celled, inferior; flower syncarpous, sympetalous or rarely apopetalous, epigynous, regular or somewhat irregular; sepals petal-like, the perianth tube often bearing a conspicuous crown within the petals.

1. Flowers with a crown-like or tubular appendage within the perianth — *Narcissus*
2. Perianth unappendaged
   a. Petals and sepals alike; native — *Hypoxis*
   b. Petals smaller than the sepals; cultivated — *Galanthus*

NARCÍSSUS — NARCISSUS, DAFFODIL

(Gr. *Narkissos,* a mythological character changed into this flower)

Bulbous herbs with linear 2-ranked leaves and solitary or clustered flowers borne on naked scapes, the flower buds protected by a spathe; sepals and petals alike, united below into a cylindrical or funnel-shaped tube, which bears a crown-like appendage (often very large) at its throat; stamens borne on the perianth tube; ovary inferior; style 1; stigma 3-lobed; fruit a capsule. Pl. 21, fig. A.

1. Flowers solitary
   - a. Crown as long as the petals and sepals — **N. Pseúdo-Narcíssus*
   - b. Crown shorter than the petals and sepals
     - (1) Flowers yellow or whitish; crown about one-half the length of the sepals and petals — **N. incomparábilis*
     - (2) Petals and sepals pure white; crown short with a red or orange margin — **N. poéticus*
2. Flowers in clusters
   - a. Leaves 3–5 mm. wide; flowers bright yellow — **N. Jonquílla*
   - b. Leaves 10–30 mm. wide; flowers white to yellow — **N. Tazétta* and its hybrids

The last-named, the commonest greenhouse species, is not hardy, but some of its hybrids such as those with *N. poeticus* are hardy.

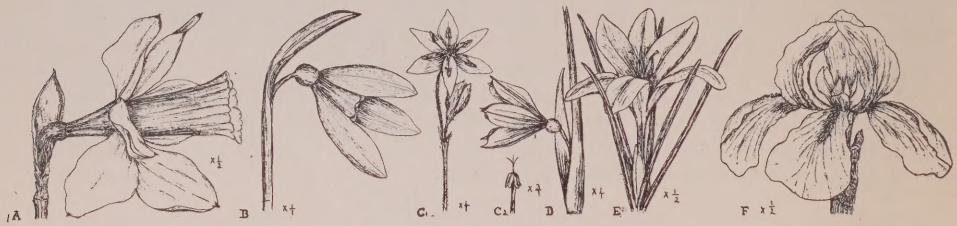


PLATE 21. A, Narcissus Pseudo-Narcissus; B, Galanthus nivalis; C, Hypoxis hirsuta; D, Sisyrinchium campestre, 1, flower, 2, stamens and pistil; E, Crocus vernus; F, Iris germanica.

HYPÓXIS — STAR GRASS

(Gr. *hypoxys,* sour)

Small, grass-like, hairy herbs arising from corms; flowers few, yellow, star-like, borne on a slender scape; sepals and petals similar, free nearly to the top of the ovary; ovary half-inferior; style 1; stigma entire; fruit indehiscent, crowned with the persistent perianth. Pl. 21, fig. C. Our only species, *H. hirsúta.*

GALÁNTHUS — SNOWDROP

(Gr. *gala,* milk, *anthos,* flower)

Small bulbous herbs blooming in earliest spring; leaves linear; flowers solitary, drooping; sepals and petals free; sepals spreading, white, much larger than the erect, obcordate greenish petals; style 1; stigma unlobed; fruit a capsule. Pl. 21, fig. B.

Drooping white flowers in earliest spring, the petals small and marked with green — **G. nivális*

Iridáceae — Iris Family

Herbaceous plants with bulbs, corms, or rootstocks, from which come the solitary flowers, scapes, or leafy stems; sepals 3; petals 3; stamens 3; pistil 1; ovary 3-celled, inferior; style with three branches; flower syncarpous, sympetalous or apopetalous, epigynous, regular or somewhat irregular; sepals petal-like, but sometimes differing considerably from the petals.

1. Style branches petal-like, concealing the stamens, petals unlike the sepals — *Iris*
2. Style branches not petal-like, stamens obvious, petals and sepals similar
   - a. Stemless; flowers rising directly from the corm — *Crocus*
   - b. Flowers borne in a cluster at the summit of a scape — *Sisyrinchium*

ÍRIS — BLUE FLAG, FLEUR-DE-LIS

(Gr. *iris*, rainbow)

Rhizomatous or bulbous plants with 2-ranked, frequently equitant leaves and solitary or loosely clustered large flowers; sepals and petals united below into a tube; sepals different from petals in form, spreading; petals erect or rarely spreading, often much smaller than the sepals; stamens 3, opposite the sepals, concealed by the style-branches; ovary inferior; style branching above into 3 spreading petal-like branches that come into close contact with the bases of the sepals; stigmas flap-like, situated on the underside of the style-branches; fruit a capsule. Pl. 21, fig. F.

1. Plants with rootstocks and flat straddling leaves
   - a. Sepals bearded
     - (1) Beard of sepals forming a line along the midrib, sepals usually larger than the petals
       - (a) Plants dwarf; the flowering stalks 3 dm. tall or less
         - x. Plant about 1 dm. tall, nearly stemless; flowers purple, yellowish, or white — **I. púmila*
         - y. Plants 1.5–3 dm. tall; flowering stem manifest
           - (x) Bracts green; flowers resembling *I. pumila* but larger — *hybrids of *I. púmila* with *I. germánica*, etc.
           - (y) Bracts papery; flowers bluish lavender, beard white — **I. Cengiálti*
       - (b) Plants more than 3 dm. tall (German iris)
         - x. Flowers usually in May
           - (x) Bracts green, tinged with purple; flowers various shades of purple; beard yellow — **I. germánica*
           - (y) Bracts papery; flowers nearly white with purple veins, fragrant — **I. florentína* (*orris-root*)
         - y. Flowers in late May and June

         Various garden hybrids chiefly of the following species:
           - (t) Sepals yellow; petals pale yellow — **I. flavéscens*
           - (u) Sepals yellow, veined and shaded with brown; petals yellow — **I. variegáta*
           - (v) Sepals dull purple; beard yellow; petals dull lilac or yellowish — **I. squálens*
           - (w) Sepals veined with red purple, otherwise as (v) — **I. sambucína*
           - (x) Flowers white, edged with lavender — **I. plicáta*
           - (y) Flowers violet to nearly white — **I. pállida*
           - (z) Flowers lilac with a white beard; stem leafless, forking low — **I. aphýlla*
     - (2) Beard not confined to the midrib of the sepals, petal larger than the sepals (Cushion iris)
       - (a) Petals and sepals marked with black on a silvery white ground — **I. susiána*
       - (b) Petals and sepals variously colored, usually marked with purple or brown on a white ground. Numerous species little cultivated; the best are hybrids of **I. Korolkówi*
   - b. Sepals not bearded
     - (1) Dwarf and nearly stemless; flowers with a long, narrow perianth tube and crested sepals — **I. cristáta*
     - (2) Flower stems 4–10 dm. long; perianth tube short
       - (a) Cultivated; leaves 5–8 mm. wide
         - x. Flowers numerous, bright blue or white; bases of old leaves very fibrous — **I. sibírica*
         - y. Flowers 2–3, pale lilac-blue; bases of old leaves not fibrous — **I. missouriénsis*
       - (b) Native; leaves 8–18 mm. wide — *I. versícolor*

2. Plants with bulbs; leaves not straddling
   - a. Dwarf; stemless; flowers with long perianth tube
     - (1) Leaves flat; petals very small, spreading — **I. pérsica*
     - (2) Leaves thick; petals narrow, erect, flowers purple, very fragrant — **I. reticuláta*
   - b. Flowering stem 2–4 dm. long; perianth tube short; flowers of various colors — **I. xíphium*

CRÓCUS — CROCUS

(Gr. *krokos,* the crocus)

Stemless herbs from corms; leaves linear; flowers funnel-shaped, emerging directly from the ground, the ovary often buried below the surface; sepals and petals similar, united below into a long tube; style-branches expanded, fringed or funnel-shaped, stigmatic at the ends. Pl. 21, fig. E.

1. Flowers yellow
   a. Anthers orange; sepals brownish on outside — **C. susiánus*
   b. Anthers pale; sepals clear yellow — **C. moesiacus*
2. Flowers violet to white — **C. vérnus*

SISYRÍNCHIUM — BLUE-EYED GRASS

(Gr. *sisyrinchion,* a bulbous iris)

Low grass-like herbs with fibrous roots; flowers small, blue, purple, or white, star-like or somewhat bell-shaped, quickly withering, in few-flowered umbels borne on simple or branched stems, each umbel protected by a spathe and usually by a second inner bract; sepals and petals similar, spreading, free nearly to the base; stamens opposite the sepals, erect, united in our species; style-branches filiform, unbranched; fruit a loculicidal capsule. Pl. 21, fig. D.

1. Leaves 2–6 mm. wide; stem prominently winged; spathe and bract glabrous — *S. angustifólium*
2. Leaves .5–2 mm. wide; stem narrowly winged; spathe and bract scabrous or puberulent — *S. campéstre*

Orchidales Orchid Order

Orchidáceae — Orchid Family

Perennial herbs with bulbs, corms, or tuberous roots; leaves sheathing sometimes reduced to scales; flowers irregular with one of the petals more or less modified into a lip-like structure, often with a spur below the lip; ovules minute and numerous; sepals 3 (or 2 by fusion); petals 3; stamens 1 or 2; ovary 1-celled; flower syncarpous, apopetalous, epigynous, irregular. In the generic descriptions "petals" has reference to the lateral petals only, the lip being described separately.

I. Lip slipper-like; stamens 2 — *Cypripedium*
II. Lip not slipper-like; stamen 1
   1. Leaves of current season absent or concealed at time of flowering
      a. Rootstock coral-like; plant entirely leafless — *Corallorrhiza*
      b. Plants with corms; leaves present in late summer or autumn
         (1) Flowers numerous, small; leaf appearing in autumn — *Aplectrum*
         (2) Flower solitary, large; leaf appearing at close of flowering season — *Arethusa*
   2. Leaves conspicuously present at time of flowering
      a. Flowers showy, pink and white
         (1) Flower solitary; lip sack-shaped — *Calypso*
         (2) Flowers in a raceme, lip flat
            (a) Sepals and lateral petals spreading, the latter thread-like — *Liparis*
            (b) Sepals and lateral petals convergent, lanceolate — *Orchis*
      b. Flowers greenish, lip flat — *Habenaria*

CYPRIPÉDIUM — LADIES' SLIPPER, MOCCASIN FLOWER

(Gr. *Cypris,* Venus, *pedion,* slipper)

Leaves 2–many; stem with 1 apparently terminal flower or with a few additional axillary flowers; sepals 3, or apparently 2 from the union of the lateral sepals behind the lip; petals mostly narrower than the sepals, lip slipper-like or bag-like; fertile stamens 2, lateral, the pollen granular, not forming masses; sterile stamen petal-like, fleshy, trowel-shaped, standing above and overhanging the stigma. Pl. 22, fig. A.

1. All three sepals separate — *C. arietínum*
2. Lateral sepals grown together, forming a single structure behind the lip
   a. Plant with two basal leaves; plant with one flower — *C. acaúle*
   b. Plants with stems leafy to the top

(1) Lip pink and white, large, as long as the sepals — *C. hirsútum* (*C. reginae*)
(2) Lip yellow or white, shorter than the sepals
  (a) Lip yellow
    x. Lip 1.3–3 cm. long; sepals purple-brown — *C. parviflórum*
    y. Lip 3–5 cm. long; sepals brownish-yellow — *C. pubéscens* (*C. hirsutum*)
  (b) Lip white — *C. cándidum*

CORALLORRHÍZA — CORAL-ROOT

(Gr. *korallion,* coral, *rhiza,* root)

Leafless, brown, purple, or yellowish herbs from a coral-like rootstock; flowers in a raceme, small to middle-sized (5–18 mm.); sepals and petals spreading, similar; lateral sepals ascending, lip somewhat larger than the other perianth segments, its base united with the bases of the lateral sepals and forming a very small spur or sac; anther 1, terminal; pollen in 4 unappendaged masses. Pl. 22, fig. B.

1. Plant yellow; flowers about 6 mm. in diameter — *C. trífida*
2. Plant reddish-purple; flowers larger
  a. Lip 3-lobed, spotted with red–purple — *C. maculáta*
  b. Lip not lobed, striped with red–purple — *C. striáta*

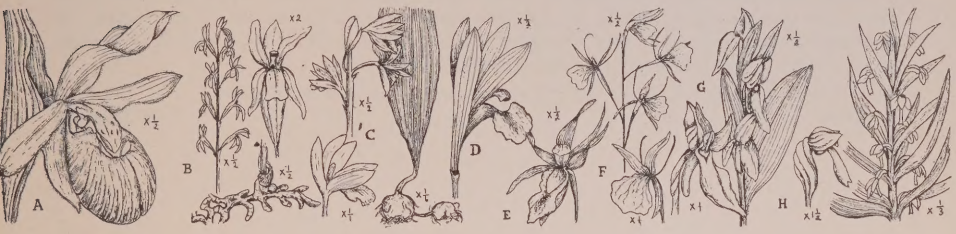


Plate 22: A, Cypripedium hirsutum; B, Corallorrhiza trifida, inflorescence, flower, rootstock; C, Aplectrum hyemale, inflorescence, flower, plant in winter condition; D, Arethusa bulbosa; E, Calypso bulbosa; F, Liparis liliifolia; G, Orchis spectabilis; H, Habenaria bracteata.

APLÉCTRUM — ADAM-AND-EVE

(Gr. *a-,* without, *plektron,* spur)

Corm-bearing rhizomatous herb with a solitary leaf in autumn lasting through the winter, often leafless at flowering time; flowers in a raceme; sepals and petals similar, arched over the column; lip free, 3-lobed, without any spur or sac-like projection at the base; stamen terminal with 4 pollen masses. Pl. 22, fig. C. A single species, *A. hyemále.*

ARETHÚSA — ARETHUSA

(Classical name of a nymph)

Plant with a corm, a solitary large magenta flower borne on a scape, and a single linear leaf appearing after the flower; sepals and petals similar, united at base, arching over the column; lip joined at base to the column, oblong, with 3–5 fringed crests; column petal-like; anther 2-celled with 4 powdery pollen masses. Pl. 22, fig. D. Only one species, *A. bulbósa.*

CALÝPSO — CALYPSO

(Gr. and L. *Calypso,* the name of a goddess)

Plant with a corm, the solitary oval leaf present during flowering; flower solitary on a scape, pink and white; sepals and petals spreading, similar, free; lip large, sac-like with out-turned margin, free from the column; column winged, bearing the operculate anther just below the summit; pollen masses 2, each 2-parted, waxy. Pl. 22, fig. E. Only one species, *C. bulbósa.*

LÍPARIS — TWAYBLADE

(Gr. *liparos,* fat, in allusion to the smooth and greasy looking leaves)

Small plants with corms, which bear 2 leaves and a scape with a few-flowered raceme of small flowers; sepals lanceolate; petals linear; lip expanded, flat; column curved; anther terminal, operculate, with 4 waxy pollen masses. Pl. 22, fig. F.

Plant with two basal leaves and a small raceme of pink-purple flowers — *L. liliifólia*

ÓRCHIS — SHOWY ORCHID

(Gr. *orchis,* orchid)

Herbs with 1–2 broad leaves; flowers in a raceme; sepals and petals spreading or converging upwards; lip flat, spurred at the base, joined to the base of the column; anther cells close together, parallel, opening downward, each containing a single long-stalked pollen mass attached to a sticky gland concealed just above the opening of the spur. Pl. 22, fig. C.

Leaves 2; flowers pink and white, showy — *O. spectábilis*

HABENÁRIA — REIN ORCHID

(L. *habena,* a rein, in allusion to the strap-like lip or spur)

[Coeloglossum]

Herbs, frequently leafy, with small or rather large flowers in racemes; sepals spreading; petals converging with the upper sepal; lip flat, spurred, sometimes much divided and fringed; anther cells diverging, opening downward, each containing a single stalked pollen mass, attached to a sticky gland, the two glands naked and not close together. Pl. 22, fig. H.

Lip 2–3-toothed at the end, longer than the spur; bracts longer than the greenish flowers — *H. bracteáta*

Plate Illustrating Inflorescences

1. Raceme of currant (*Ribes*).
2. Diagram of raceme.
3. Spike of plantain (*Plantago*).
4. Diagram of spike.
5. Corymb of cherry (*Prunus*).
6. Panicle.
7. Diagram of mixed panicle (with cymose details).
8. Staminate catkin of oak (*Quercus*).
9. Pistillate catkin of willow (*Salix*).
10. Spadix of jack-in-the-pulpit (*Arisaema*); part of the spathe removed to show the flowers.
11. Head of button bush (*Cephalanthus*).
12. Head of Compositae.
13. Compound umbel of fennel (*Foeniculum*).
14. Diagram of simple umbel.
15. Diachasial cyme.
16. Diagram of diachasial cyme.
17. Paired monochasial scorpioid cymes of forget-me-not (*Myosotis*).
18. Diagram of scorpioid monochasial cyme.
19. Diagram of helecoid monochasial cyme.

Figures 1, 3, 5, 8, 13, 17, 19 after LeMaout and Decaisne; figures 6, 10, 11, 15 after Gray

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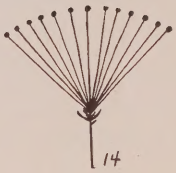
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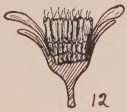
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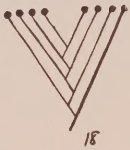
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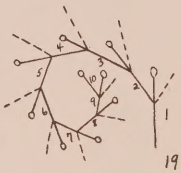
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Plate Illustrating Various Types of Flowers and Flower Parts

Figures 1–7. Various Flower Types

1. Hypogyny. Longitudinal section of buttercup (*Ranunculus*).
2. Perigyny. Longitudinal scetion of *Spiraea* flower. h, hypanthium.
3. Epigyny. Longitudinal section of currant flower (*Ribes*). h, hypanthium; o, ovary.
4. Regular apopetalous flower of flax (*Linum*).
5. Irregular apopetalous flower of orchid (*Orchis*).
6. Irregular sympetalous flower of snapdragon (*Antirrhinum*).
7. Naked unisexual flowers of willow (*Salix*).

Figures 8–11. Apocarpous Gynoecia

See also figures 1 and 2 above

8. Flower of stonecrop (*Sedum*).
9. Carpel (follicle) of gold thread (*Coptis*).
10. Carpel (follicle) of marsh marigold (*Caltha*) dehiscing.
11a. Cluster of simple pistils of Pheasant's Eye (*Adonis*). b, one carpel (achene).

Figures 12–18. Syncarpous Gynoecia (Compound Pistils), Showing Various Types of Placentation

See also figures 3 and 7 above

12. Flax (*Linum*).
13. Axillary placenta of *fuchsia*. a, longitudinal section; b, cross section.
14. Parietal placentae of bloodroot (*Sanguinaria*). a, longitudinal section; b, cross section.
15. Free central placenta of primrose (*Primula*). a, longitudinal section; b, cross section.
16. Free central placenta of chickweed (*Arenaria*). a, longitudinal section; b, cross section.
17. Apical placenta of mulberry (*Morus*).
18. Basal placenta of globe amaranth (*Gomphrena*).

Figures 1, 4, 5, 6, 7, 8, 11a, 11b, 12, 17, 18 after LeMaout and Decaisne; figures 2, 3 after Baillon; and figures 9, 10, 16a, 16b after Gray.

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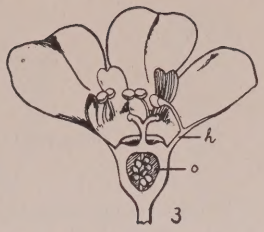

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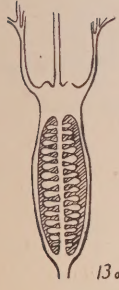
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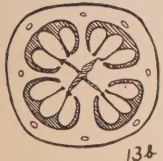
13b

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Plate Illustrating Various Types of Fruit

Figures 1–11. Dry Fruits

1. Follicle of marsh marigold (*Caltha*).
2. Achene of buttercup (*Ranunculus*).
3. Legume of sweet pea (*Lathyrus*).
4. Capsule of iris; dehiscence loculicidal.
5. Capsule of poppy (*Papaver*); dehiscence by pores just below the edge of the stigma.
6. Silique of wallflower (*Cheiranthus*); dehiscence septifragal.
7. Pyxis of purslane (*Portulaca*) dehiscence circumcissile.
8. Cremocarp of fennel (*Foeniculum*) splitting into two mericarps.
9. Samara of common elm (*Ulmus*).
10. Pair of samaras of maple (*Acer*).
11. Nut (acorn) of oak (*Quercus*).

Figures 12–14. Simple Fleshy Fruits

12. Berry of cranberry (*Vaccinium*); a, whole berry; b, cross section.
13. Drupe of peach (*Amygdalus*) sectioned longitudinally.
14. Pome of apple (*Malus*) sectioned longitudinally.

Figures 15–18. Aggregate and Multiple Fruits

15. Aggregate fruit of strawberry (*Fragaria*), a fleshy receptacle bearing simple fruits (achenes) on its outer surface.
16. Aggregate fruit (etaerio) of blackberry (*Rubus*), a fleshy receptacle covered with small drupes.
17. Aggregate fruit (hip) of rose (*Rosa*), a fleshy urn-shaped receptacle, bearing the simple fruits (achenes) on its inner surface.
18. Multiple fruit of mulberry (*Morus*); a, catkin of pistillate flowers; b, the multiple fruit; c, one of the simple fruits, an achene surrounded by 4 fleshy sepals.

Figures 1, 2, 3, 4, 7, 9, 11, 13 after Gray; figures 5, 6, 8, 10, 14, 18b after LeMaout and Decaisne; and figure 16 after Baillon.

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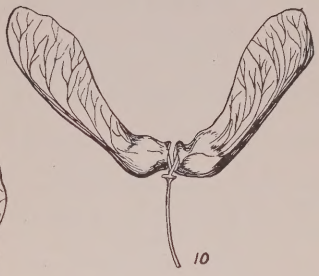
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11

12a

12b

18a

13

15

18c

18b

14

16

17a

17b

Vnk

GLOSSARY

Acaulescent. With the stem subterranean or nearly so.
Achene. A dry, one-seeded fruit.
Acuminate. Gradually tapering to a point.
Acute. Sharp-pointed.
Adnate. United with, as the ovary adhering to the hollow receptacle.
Alternate. Not opposite; with a single leaf at each place of attachment.
Annual. Lasting only one growing season.
Anther. The upper part of the stamen, containing the pollen; the pollen pouch.
Apetalous. Without petals.
Apex. Tip or upper end.
Apiculate. Ending in a short, pointed tip.
Apocarpous. Having or consisting of separate carpels.
Apopetalous. Having or consisting of separate petals.
Appressed. Lying close to or against another organ.
Aquatic. Growing in the water.
Aril. Usually a fleshy appendage growing about a seed.
Ascending. Growing obliquely upward.
Auricle. An ear-shaped appendage.
Awl-shaped. Narrowed upward from the base to a slender, rigid point.
Awn. A slender bristle-like structure.
Awn-pointed. Tipped with an awn.
Axil. The angle between leaf and stem.
Axillary. Borne in the axils of leaves.
Axis. A term generally applied to that portion of a branch which bears the flowers or the parts of a flower.

Barbed. Having a tip like a fishhook.
Basal. Arising from the base.
Beak. An elongated tapering structure.
Beaked. Bearing a beak.
Bearded. With hairs limited more or less to a certain area of an organ.
Berry. A fruit in which the seeds are imbedded in a soft or fleshy substance.
Biternate. Twice ternate.
Blade. The flat, expanded part of a leaf.
Bract. A leaf, usually small, standing below a flower or a flower cluster.
Bracteole. A small leaf or scale on the pedicel below the flower.
Bristle. A stiff hair or any similar outgrowth.
Bulb. A short stem with fleshy scales, usually subterranean.
Bulblets. Small bulbs.
Bulbous. Like a bulb; bearing bulbs.

Callous. Cartilaginous in texture.
Campanulate. Bell-shaped.
Capsule. A dry fruit consisting of two or more carpels.
Carpel. A simple pistil or one member or division of a compound pistil.
Catkin. An elongated axis covered with scales all around that bear either stamens or pistils.
Caudex. The persistent base of perennial herbs, usually only the part above ground.
Cell. A cavity or chamber in an ovary.
Ciliate. Provided with marginal hairs.
Claw. Applied to the much-narrowed lower portion of a petal.
Cleft. Cut about halfway to the middle.
Cleistogamous. Flowers that do not open but are pollinated from their own anthers.
Climbing. Growing upon a support of some kind.
Compound. Composed of two or more similar parts united into one whole.
Compound leaf. One divided into separate leaflets.
Concrescent. Grown together.
Cone. An elongated axis bearing stamens or thickened scales with naked ovules; the flower and fruit of conifers.
Connate. United; especially like structures joined from the beginning.
Connivent. Coming into contact, converging.
Convolute. Rolled up lengthwise.
Cordate. Heart-shaped.
Coriaceous. Leathery in texture.
Corm. A swollen fleshy base of a stem.
Corymb. A flat-topped or convex open flower cluster.
Crateriform. In the shape of a cup, hemispherical or more shallow.
Creeping. Growing along the ground.
Cremocarp. A fruit from an inferior ovary which at maturity splits into two achene-like bodies.
Crenate. Scalloped; with rounded, shallow teeth.
Crenate-toothed. With rounded teeth.
Cuneate. Wedge-shaped.

Cyme. A flower cluster in which the terminal or middle flower blossoms first; usually somewhat flat.

Deciduous. Falling off at the close of the growing period.
Declined. Bent down.
Decurrent. Applied to leaf bases, running down the stem.
Dentate. Toothed, with outwardly projecting teeth.
Denticulate. With small teeth.
Depressed. Vertically flattened.
Diffuse. Widely or loosely spreading.
Digitate. Spreading like the fingers of a hand.
Dioecious. Bearing pistils and stamens on different plants.
Disk. An enlargement of the axis of a flower around the base of the pistil; the group of tubular flowers in the Compositae.
Dissected. Cut or divided into numerous segments.
Divided. Lobed to the base.
Dorsal. Upon or relating to the back or outer surface of an organ.

Entire. Without lobes, divisions, or teeth.
Ephemeral. Lasting for only a day or less.
Epigynous. Applied to a flower with the parts upon the ovary.
Equitant. Straddling; used of leaves which enfold each other in two ranks.
Erect. Standing upright.
Exserted. Projecting beyond the surrounding parts.
Extra-axillary. Springing from the stem above the axil of a leaf.

Fascicle. A dense cluster.
Fascicled. Borne in dense clusters.
Fertile. Bearing seeds or bearing pollen.
Filament. The stalk bearing the anther.
Fleshy. Soft, containing more or less sap.
Flower. An axis bearing stamens or pistils or both; generally sepals and petals are associated with these.
Foliaceous. Leaf-like.
Fruit. A ripened ovary, sometimes that part of the axis that becomes fleshy as the seeds ripen.
Fugaceous. Falling or fading very early.

Gibbous. Protuberant or swollen on one side.
Glabrous. Without hairs.
Gland. A secreting surface or structure; any small appendage or protuberance having the appearance of such an organ.
Glandular. With glands or gland-like.
Glaucous. Covered with a bluish or white, fine, mealy substance, a bloom.
Globose. Spherical or nearly so.
Glume. The small scale of the spikelets of grasses and sedges.

Hastate. Arrow-shaped but with the basal lobes diverging.
Head. A dense cluster of sessile or nearly sessile flowers on a very short axis.
Herb. A non-woody plant that dies down to the ground annually.
Herbaceous. Of the nature of herbs.
Hirsute. With somewhat coarse, stiff hairs.
Hispid. With bristly stiff hairs.
Hypanthium. The cup-shaped, saucer-shaped, or tubular structure that bears the sepals, petals, and stamens in a perigynous or epigynous flower.
Hypogynous. Applied to a flower with the other parts below the ovary.

Imbricate. Overlapping; in an imbricated corolla one petal must be wholly outside and one wholly inside.
Immersed. Growing wholly under water.
Included. Not projecting beyond the surrounding parts.
Indehiscent. Applied to fruits that do not open or split to let out the seeds.
Indurated. Hardened.
Inferior. Applied to an organ situated below another one.
Inflorescence. The portion of a plant bearing the flowers; mode of arrangement of flowers.
Integument. A protecting layer or coat, as the covering of a seed.
Internode. The part of the stem between two successive nodes.
Involucral. Of an involucre.
Involucre. A group of leaves or scale-like leaves borne just underneath a flower or a close cluster of flowers.
Irregular. Applied to a flower in which the petals or other parts are unlike.

Keel. The two fused lower petals of the flower of the pea family.
Keeled. Ridged like the keel of a boat.

Laciniate. Slashed, cut into narrow pointed lobes.
Lanceolate. Shaped like a lance.
Ligulate. In the form of a strap.
Ligule. A strap-shaped organ, as the rays in the Compositae.

Limb. The expanded portion of a sympetalous corolla above the throat or the expanded portion of any petal.

Linear. Long and narrow with sides nearly parallel.

Linear-lanceolate. Narrowly lance-shaped.

Lip. Each of the main upper and lower divisions of a zygomorphic corolla or calyx; the peculiar modified petal of an orchid flower.

Lipped. Having a lip.

Loculicidal. Dehiscing into the cavity of the cell.

Mericarp. One of the achene-like halves into which the fruit of the Umbelliferae splits.

Monoecious. Bearing stamens and pistils on the same plant but in different flowers.

Mucronate. Ending in a small abrupt tip.

Nectariferous. Producing nectar.

Nerve. One of the lines or ridges running through a leaf.

Net-veined. Veins running in various directions and connecting with each other.

Netted-veined. Veins running in various directions and connecting with each other.

Neutral. Without stamens or pistils.

Nodding. Hanging on a bent pedicel.

Node. The part of the stem that normally bears a leaf.

Nut. A dry, one-seeded, indehiscent fruit with a stony shell or covering.

Nutlet. A diminutive nut.

Obconical. Shaped like an inverted cone.

Obcordate. Inversely heart-shaped.

Oblanceolate. Inverse of lanceolate.

Oblong. Somewhat longer than broad, with the sides nearly parallel.

Oblong-lanceolate. Broadly lance-shaped.

Obsolete. Not evident, rudimentary.

Obtuse. Rounded or blunt.

Ocrea. A legging-shaped or tubular stipule.

Odd-pinnate. Pinnate with an odd or unpaired leaflet at the tip.

Operculate. Furnished with a lid.

Opposite. Applied to organs inserted at the same level but 180 degrees apart.

Orbicular. Circular.

Ovary. The part of the pistil in which the young seeds are borne.

Ovate. Shaped like the outline of an egg.

Ovule. A young seed.

Palmate. Radiately lobed or divided.

Palmately. In a palmate manner.

Panicle. A compound flower-cluster, the lower branches longest and blossoming first.

Pappus. The bristles, hairs, awns and like structures that are borne upon the fruit in the Compositae.

Parasitic. Growing upon and getting its nourishment from some other plant.

Parietal. Borne upon the wall.

Parted. Deeply cleft.

Pedicel. The stalk of a flower in a flower cluster.

Peduncle. The stalk of a flower or of a flower cluster.

Peltate. Shaped like a shield with a stalk attached in the middle below.

Pendulous. More or less hanging or declined.

Perennial. Lasting from year to year.

Perfect. A flower having both stamens and pistils.

Perfoliate. Leaves appearing to be pierced by the stem.

Perigynium. The sack-like membrane enclosing the ovary or the achene in the genus Carex.

Perigynous. Applied to a flower in which the parts are united into a cup around the ovary.

Persistent. Organs that remain attached after the growing season.

Petal. One of the inner set of flower leaves, usually brightly colored, of a corolla.

Petaloid. Resembling a petal, especially as to color.

Petiole. The stalk of a leaf.

Pilose. With long soft hairs.

Pinnate. Leaves divided into leaflets or segments along a common stalk.

Pinnately. In a pinnate manner.

Pinnatifid. Pinnately cleft to the middle or beyond.

Pistil. The central or terminal organ in a flower containing the young seeds.

Pistillate. With pistils but without stamens.

Placenta. The partitions or parts of the ovary to which the ovules are attached.

Plumose. Having fine hairs on each side like a feather.

Plumy. Feathery.

Pod. A dry fruit made up of one carpel and splitting along two sides.

Pollen. The minute grains found in the anther.

Polygamous. Bearing both perfect and imperfect (staminate and pistillate) flowers.

Polygamo-dioecious. Polygamous and having the perfect and imperfect flowers on different plants.

Polygamo-monoecious. Polygamous and having perfect and imperfect flowers on the same plant.

Puberulent. With very short hairs.
Pubescent. With hairs.
Punctate. Dotted with pits or internal translucent glands.

Raceme. A more or less elongated axis bearing flowers with about equal pedicels.
Radical. Belonging to or proceeding from the root or base of the stem near the ground.
Ray. One of the marginal flowers in the Compositae.
Receptacle. The end of a flower stalk or axis bearing the floral organs; in the Compositae bearing flowers.
Recurved. Bent back.
Regular. Having the members of each part alike in size and shape.
Reniform. Kidney-shaped.
Resinous. Bearing resin.
Retrorse. Turned downward or backward.
Rhizomatous. Having a rhizome.
Rhizome. A subterranean stem, usually rooting at the nodes and becoming erect at the apex.
Rhombic. In outline like a rhombus; obliquely four-sided.
Rootstock. An underground stem.
Rotate. Flat and circular in outline; wheel-shaped.
Rush-like. Resembling a rush.

Sagittate. Shaped like an arrow-head.
Salverform. Having a slender tube, abruptly expanded into a flat limb.
Samara. A winged fruit.
Scabrous. Rough.
Scale. A minute or much reduced leaf.
Scape. A leafless or nearly leafless stalk bearing a flower or a cluster of flowers and arising from the underground portion of a plant.
Scapose. Bearing or resembling a scape.
Scurfy. With small bran-like scales on the epidermis.
Segment. One of the parts of a leaf or similar organ that is cleft or divided.
Sepal. One of the outer set of flower leaves, usually green.
Septicidal. Dehiscing between the cells.
Serrate. With teeth projecting forward.
Serrulate. Finely serrate.
Sessile. Without a stalk or pedicel.
Sheath. The part of a leaf or leaf base that clasps or encloses the stem.
Sheathing. A term applied to the manner in which the base of a leaf wraps the stem.
Shrub. A woody plant; smaller than a tree.
Simple. Of one piece, not compound.
Sinuate. With strongly wavy margins.
Sinus. The cleft or recess between two lobes.
Spadix. A fleshy axis bearing sessile flowers.
Spathe. A leaf-like structure standing below an inflorescence.
Spatulate. Spoon-shaped, shaped like a spatula.
Spike. An axis bearing sessile flowers.
Spikelet. A small few-flowered spike, the flower cluster of grasses and sedges.
Spine. A sharp, woody or rigid outgrowth from the stem.
Spiny. Provided with spines.
Spur. A hollow projection from the sepal or petal of a flower.
Stamen. The organ of a flower that bears the pollen.
Staminate. With stamens but without pistils.
Staminode. A sterile stamen.
Standard. The large upper petal of the flower of the pea family.
Stigma. The top of the pistil to which pollen grains become attached.
Stipule. Outgrowths of, or appendages to, the base of a petiole.
Strap-shaped. Long and narrow in outline.
Style. The narrowed or pointed part of the pistil, bearing on its top the stigma.
Stylopodium. A disk-like expansion at the base of the style, as in the Umbelliferae.
Sub. A Latin prefix usually signifying somewhat, slightly, or nearly.
Submerged. Under water.
Subtend. To stand below on the axis.
Subulate. Awl-shaped.
Succulent. Juicy, fleshy.
Superior. Applied to an organ situated above another one.
Sympetalous. Having or consisting of united petals.
Syncarpous. Having or consisting of carpels joined together.

Teeth. The regular projections along the margin of a leaf.
Tendril. A slender coiling organ.
Terete. Cylindric or needle-like.
Ternate. Consisting of three leaflets.
Terrestrial. Growing on the ground.
Thorn. A stiff sharp-pointed outgrowth from the bark or rind.
Throat. The orifice of a sympetalous corolla, the part between the tube and the limb.
Tomentose. Covered with dense, matted, wool-like hairs.

Trailing. Creeping along the ground.
Trifoliolate. Having three leaflets.
Truncate. Ending abruptly, as if cut off transversely.
Tubercle. The persistent enlarged base of the style in some Cyperaceae, a small tuber.
Twining. Winding spirally about a support.

Umbel. A flower cluster with all the pedicels arising from the same point.
Umbellate. Borne in umbels.
Unarmed. Without spines, thorns, or prickles.

Valve. One of the portions into which some dry fruits split; a trapdoor-like opening in the pollen chambers of some anthers.
Verticillate. Arranged in a whorl or cycle.
Vestigial. Reduced almost to disappearance.
Villous. With long soft hairs not matted together.
Viscid. Glutinous, sticky.

Webby. With a tuft of slender, curly hairs.
Whorl. A group of three or more similar organs, as leaves, radiating from the place of attachment.
Whorled. Borne in a whorl.
Wing. One of the two lateral petals of the flower of the pea family.

Zygomorphic. Applied to a flower with petals of different form.

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